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HELMINTHOLOGICAL ABSTRACTS

incorporating

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HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY

FOR THE YEAR 1957

Vol. 26, Part 4

322—Acta Medica Italica di Malattie Infettive e Parassitarie.

a. TECCE, N. & VILLARI, A., 1957.—" Contributo statistico sulla diffusione delle parassitosi intestinali." **12** (6), 150–156.
b. IZZO, G., 1957.—" L'incidenza dell'anchilostomiasi nel Comune di Napoli negli ultimi venti anni." **12** (6), 157–165.

(322a) In Castellammare di Stabia in Italy the incidences of intestinal helminths among 712 rural dwellers were *Ascaris lumbricoides* 32·4%, *Trichuris trichiura* 65·7%, *Ancylostoma duodenale* 25·8% and *Taenia saginata* in three persons. Among 288 town dwellers, *Ascaris lumbricoides* occurred in 19·0%, *Trichuris trichiura* in 25·0%, *Taenia saginata* in two persons and *Hymenolepis nana* in one. M.MCK.

(322b) Izzo tabulates the number of cases of hookworm infection verified annually in the municipality of Naples from 1935 to 1955. The high incidence in the years 1935–37 coincided with the peak development of the endemic focus in Ponticelli. This focus was wiped out by the treatment of infected persons, educational propaganda, the disposal of refuse, continuous emptying of cesspools and free distribution of calcium cyanamide and ferrous ammonium sulphate for disinfecting cesspools and human faecal manure. Following the change from a rural to an industrial economy, with the provision of better housing, only four hookworm cases have been reported from Naples during the last ten years. M.MCK.

323—Acta Medicinae Okayama.

a. INATOMI, S., 1957.—" A study on the structure of egg shell of *Enterobius vermicularis* (Linnaeus, 1758) Leach, 1853, with the electron microscope." **11** (1), 18–22.
b. KIMURA, M., 1957.—" Biological and chemical observations on multiseptate digestion tank devised by Professor Yamaguti." **11** (2), 88–93.

(323a) In electron photomicrographs of the egg of *Enterobius vermicularis* the shell appears to be divided into two chitinous layers. In the outer layer there are countless fine radiating tubules and an irregular reticulum of chitinous fibrils, with granules filling the interstices. In the inner layer chitinous microfibrils form a fine irregular network filled with fine granules but this layer is looser in texture. The outer layer is very thin in the early stage of its formation but gradually becomes thicker. Both surfaces of each layer have a dense border. R.T.L.

(323b) Kimura describes and figures a multiseptate digestion tank for the mass disposal of nightsoil by natural decomposition by faecal and aerial bacteria under anaerobic and aerobic conditions without the use of artificial heat. The tank consists of about 20 chambers, but all the pathogenic organisms, including the eggs of *Ascaris lumbricoides*, are completely destroyed in the first chamber, the thick layer of scum helping the fluid parts to decompose anaerobically. The surplus scum from the third and subsequent chambers may be buried or used for composting and the effluent from the 20th chamber can be discharged in a drainage creek without polluting it. R.T.L.

* Titles so marked throughout this number have not been seen in the original.

324—Acta Parasitologica Polonica.

a. BEZUBIK, B., 1957.—" Studies on *Polymorphus minutus* (Goeze, 1782)—syn. *Polymorphus magnus* Skrjabin, 1913." **5** (1/12), 1–8. [Polish summary p. 8.]
b. FURMAGA, S., 1957.—" Helmintofauna gryzoni polnych (Rodentia) okolic Lublina." **5** (1/12), 9–50. [English summary pp. 47–50.]
c. ŚLUSARSKI, W., 1957.—" *Aphanurus balticus* sp.n. (Trematoda, Hemiuridae) from salmon *Salmo salar* L. of the Baltic Sea." **5** (1/12), 51–62. [Polish summary pp. 61–62.]
d. KISIELEWSKA, K., 1957.—" O stosunkach wewnątrzpopulacyjnych u larw *Drepanidotaenia lanceolata* (Bloch) w niektórych żywicielach pośrednich." **5** (1/12), 63–90. [English summary pp. 87–90.]
e. PROST, M., 1957.—" *Dactylogyrus vistulae* sp.n. and *Gyrodactylus raabei* sp.n.—new species of Monogenoidea of gills of fishes." **5** (1/12), 107–115. [Polish summary p. 115.]
f. POJMAŃSKA, T., 1957.—" Pasożyty wewnętrzne (Cestoda, Trematoda) drobnych ssaków polnych z okolic Turwi koło Poznania." **5** (1/12), 117–161. [English summary pp. 156–161.]
g. BEZUBIK, B., 1957.—" Supplement to the study on the helminth fauna of wild ducks (subfamily Anatinae)." **5** (1/12), 177–179. [Polish summary p. 179.]
h. KOZŁOWSKA, J., 1957.—" Z badań nad helmintofauną lisów hodowlanych i dzikich." **5** (1/12), 181–192. [English summary p. 192.]
i. KISIELEWSKA, K., 1957.—" O zjawiskach obumierania larw *Drepanidotaenia lanceolata* (Bloch) w niektórych żywicielach pośrednich." **5** (1/12), 193–210. [English summary pp. 209–210.]
j. DOLLFUS, R. P., 1957.—" Les affinités du genre *Pholeter* T. Odhner, 1914 et l'émendation de la famille Troglotrematidae T. Odhner, 1914 (Trematoda, Digenea)." **5** (1/12), 211–214. [Polish summary p. 214.]

(324a) Bezubik re-examined *Polymorphus minutus* from wild ducks in Poland, where it occurs in 33% of *Spatula clypeata*, 17% of *Anas platyrhynchos*, 13% of *Querquedula querquedula* and 3% of *Nyroca nyroca*. On one occasion he obtained a single specimen from *Marila fuligula*. After investigating about 340 specimens he concludes that *P. magnus* is a larger form of, and is synonymous with *P. minutus*. R.T.L.

(324b) From 279 out of 687 field rodents, belonging to eight species, collected in the neighbourhood of Lublin, Furmaga obtained and gives a detailed and illustrated description of 16 species of helminths, viz., two Trematoda, five Cestoda and nine Nematoda. *Apodemus agrarius* is a new host for *Hymenolepis diminuta*, *Heligmosomum polygyrum*, *Trichocephalus muris* and *Ganguleterakis spumosa*. Four species are new for Poland, viz., *Longistriata beta*, *Heligmosomum aberrans*, *H. polygyrum* and *H. skrjabini*. It is noted that the only larval form found during these investigations was *Strobilocercus fasciolaris*. R.T.L.

(324c) *Aphanurus balticus* n.sp. from *Salmo salar* is very similar to, but differs from, *A. stossichi* in having a clearly visible and transformed ecsoma which may act as a sphincter of the outlet of the excretory bladder. On this account it should, in the author's opinion, eventually receive a new generic name *Helaphanurus* n.g., within a new subfamily, but for the present he includes his new species in the genus *Aphanurus* until the presence or absence of an ecsoma in the other species of *Aphanurus* is verified. R.T.L.

(324d) In this study of intrapopulation relations, Kisielewska finds that, although *Cyclops s. strenuus* shows great extensity and intensity of invasion by larvae of *Drepanidotaenia lanceolata* throughout the year, spring and autumnal specimens of this host reveal differences in intrapopulation relations. In the spring, larval populations of seven to ten develop at a uniform and rapid rate and all attain the cercocyst stage in nine to eleven days. Under conditions of overcrowding, development is prolonged by several days or may not be completed. In those cyclops infected in autumn the number of cercocysts formed is on an average two and more rarely three to four; a large proportion of the larvae may be inhibited or a number or the whole of them may die. The causes of developmental disturbances of the population of larval *D. lanceolata* in the intermediate host are the species, sex and age of the host, the season when invasion took place, the location of the larvae in the body-cavity and their mutual arrangement, and the individual characteristics of the larvae. R.T.L.

(324e) In *Dactylogyrus vistulae* n.sp. from the gills of the whiting *Leuciscus cephalus* and the roach *Rutilus rutilus* the male copulatory apparatus is identical with that figured by Malevitskaya (1951) as that of *D. similis* yet it is not that of this species, but is identical with the male of *D. vistulae*. Apparently Malevitskaya was dealing with a mixture of the two species. The six pairs of marginal hooklets and one gigantic pair of hooklets have a better developed manubrium than the marginal hooklets of *D. similis*. The gigantic pair of marginal hooklets on the haptor is the first pair whereas in *D. similis* it is the seventh pair, and unlike those of *D. similis* the hooklets are bent and form an obtuse angle at the borderline of the manubrium. *Gyrodactylus raabei* n.sp. from the gills of the ruffe *Acerina cernua* was first described as *G. arcuatus* by Alarotu (1944) from which it differs in the dimensions of the anchors, dorsal bars and marginal hooklets which are considerably larger. The internal process of the anchors is longer and terminates more bluntly. The dorsal bar is thin and bent more archly. The basal bar lacks the lateral prolongations of *G. arcuatus*. R.T.L.

(324f) One trematode and four cestode species were collected from rodents and three trematode and eight cestode species from insectivores, caught around Turew near Poznan in Western Poland. Each species is succinctly described and figured, and the various measurements given by other writers are tabulated with those given by the author. R.T.L.

(324g) To the three species of Acanthocephala reported by Bezubik in 1956 as parasites of wild ducks in Poland he now adds *Polymorphus contortus* which he has not only found in *Anas acuta*, *A. strepera*, *Botaurus stellaris*, *Lanius collurio* and *Spatula clypeata*, but also in a new host *Querquedula querquedula*. R.T.L.

(324h) Twelve species of helminths were recovered at autopsies on 109 foxes, of which 84 were reared on Polish farms, 25 were wild foxes of which five were of unknown origin from the Warsaw Zoo and 20 were shot around the town Lodz. Three species are new records for Poland, viz., *Metorchis albidus*, *Pseudamphistomum truncatum* and *Thominx böhmi*. The wild foxes were considerably more frequently infected than the bred foxes. The helminths previously recorded by Watkins & Harvey (1942), Furmaga & Wysocki (1951) and by Kozlowska, in this article, are tabulated. R.T.L.

(324i) Kisielewska has studied the death of *Drepanotaenia lanceolata* larvae in *Cyclops strenuus*, *C. vicinus*, *C. furcifer*, *Eucyclops serrulatus*, *E. macruroides*, *E. macrurus*, *Macrocyclops viridis* and *M. albidus*. It occurred most frequently amongst the spherical forms or those with a border, less so when the fully developed scolex was being invaginated and in normally formed cercocysts. It depended on the sex, age and species of the host and on the season when the host-parasite system became established and in some instances may be an expression of a defensive reaction of the host. R.T.L.

(324j) In 1939 Dollfus had demonstrated the heterogeneous character of Odhner's family Troglotrematidae and had found it preferable to recognize as separate families Paragonimidae, Nanophyetidae, Collyriclidae, Pholeteridae, Renicolidae and Troglotrematidae (containing only the genera *Troglotrema* and *Nephrotrema*). Now he rejects *Nephrotrema* and restricts Troglotrematidae to the single genus *Troglotrema*. In 1939 he had also affirmed that *Pholeter* had affinities with the Heterophyoidea as it had circumoral spines as in Centrocestinae. The specimens of *Pholeter* described and figured by some authors have lost their spines. They are now illustrated in a drawing made from a *Pholeter gastrophilus* taken from a duodenal cyst in *Delphinus delphinus*. R.T.L.

325—Acta Physiologica Sinica.

a. LIANG, Y., SHEN, M. L., CHEN, E. H. & TING, K. S., 1957.—[Studies on antibilharzial drugs. X. Influences of sodium dimercaptosuccinate on the distribution, excretion and therapeutic activity of tartar emetic in rabbits.] **21** (3), 235–243. [In Chinese: English summary p. 243.]

(325a) In rabbits experimentally infected with *Schistosoma japonicum* the anthelmintic effect of tartar emetic injections was destroyed by the subsequent injection of sodium α,α′-dimercaptosuccinate. R.T.L.

326—Acta Tropica. Basle.

a. SARWAR, M. M., 1957.—" A critical survey of the representation of the genus *Trichuris* in ruminants in Indo-Pakistan." **14** (3), 225–227.
b. SARWAR, M. M., 1957.—" Some observations on the taxonomy of dictyocaulids." **14** (3), 228–230.

(326a) Sarwar tabulates the sex ratio, worm burden and incidence of the species of *Trichuris* from 28 sheep and goats in Punjab-Pakistan. His re-examination of a large number of collections, from these animals, made in India by various individuals and identified as *Trichuris ovis* has shown that in every case the whipworms belong to the species of *T. skrjabini* alone or in combination with *T. globulosa*. The collection from *Ovis vignei* and *Gazella bennettii* in India, identified as *T. ovis*, contained *T. skrjabini* only. The description of material collected over a period of two years by Thapar and Singh from sheep and goats in India is a mixed account of *T. globulosa* and *T. skrjabini*. Sarwar is convinced that *T. ovis* is extremely rare or does not occur in Indo-Pakistan. R.T.L.

(326b) Sarwar discards the genus *Bronchonema* Mönnig, 1932 on the ground that *B. magna* bears a close resemblance to *Dictyocaulus filaria* in possessing only two lips and similar copulatory bursa, vagina and first-stage larva. *B. magna* is transferred to *Dictyocaulus* subgenus *Dictyocaulus*. As *D. arnfieldi* has a single dorsal ray with a proximal stem and two branches with bidigitate ends, the postero- and medio-laterals separate in their distal half and the first-stage larva has a slender transparent appendage at its caudal extremity, it is made type of *Arnfieldia* n.g. The subgenus *Micrurocaulus* Skrjabin, 1934, containing *D.* (*M.*) *viviparus*, *D.* (*M.*) *cameli* and *D.* (*M.*) *eckerti*, is raised to generic rank, for although, like *Dictyocaulus*, the dorsal ray is tridigitate, the postero- and medio-laterals are completely fused and the distal extremity of the first-stage larva is pointed not blunt. R.T.L.

327—Afrique Française Chirurgicale.

a. LOMBARD, P. & LARMANDE, A., 1957.—" Echinococcose des os du crâne." **15** (1), 1–19.
b. HOUEL, J., 1957.—" Traitement du kyste hydatique du poumon. Point de vue du chirurgien thoracique." **15** (1), 27–28.
c. RIVES, J., 1957.—" Kyste hydatique de l'angle iléo-coecal. Confrontation anatomo-radiologique." **15** (1), 70–72.
d. LAGROT, F. & CORIAT, P., 1957.—" Volumineux kyste hydatique du foie. Mise à plat par résection du dôme saillant." **15** (1), 87–93.

328—Agricultural Chemicals. Baltimore.

a. LEAR, B., 1957.—" Soil fumigation for nematode control." **12** (8), 40–43.

(328a) Soil fumigants for the control of nematodes which have been introduced since 1952 are assessed and new methods of application by modified gravity flow applicators are described. H.R.W.

329—Agricultural Gazette of New South Wales.

a. ANON., 1957.—" New plant diseases." **68** (11), 581, 613.

(329a) This list of plant diseases recorded for New South Wales for the first time includes *Meloidogyne* sp. in *Begonia tuberhybrida* and *Hypericum perforatum*, *M. incognita* var. *acrita* and *M. javanica* in *Prunus persica*, *Paraphelenchus pseudoparietinus* in cultivated mushrooms, *Agaricus hortensis*, and *Aphelenchoides olesistus* in *Kalanchoe coccinea*, *Peperomia magnoliifolia* and *Primula obconica*. R.T.L.

330—Akusherstvo i Ginekologiya. Moscow.

*a. PALII, E. T., 1957.—[Influence of ancylostomiasis on the female genitalia.] **33** (1), 65–69. [In Russian.]

331—American Heart Journal.

a. LOPES DE FARIA, J., CZAPSKI, J., RIBEIRO LEITE, M. O., OLIVEIRA PENNA, D. DE, FUJIOKA, T. & ULHÔA CINTRA, A. B. DE, 1957.—" Cyanosis in Manson's schistosomiasis. Role of pulmonary schistosomatic arteriovenous fistulas." **54** (2), 196–204.

(331a) The cyanosis in two cases of pulmonary schistosomiasis mansoni is attributed largely to the numerous arteriovenous fistulas in the lungs produced by schistosome eggs. R.T.L.

332—American Journal of Hygiene.

a. CHERNIN, E., 1957.—" Studies on the control of schistosome-bearing snails. VII. Streptomycin-induced inhibition of growth and reproduction in the schistosome-bearing snail, *Australorbis glabratus*." **66** (3), 321–330.

(332a) The growth of *Australorbis glabratus* maintained at 76°–78°F. was inhibited by the addition of small amounts of streptomycin to their aquaria (the concentrations produced were of 50 μgm. or 100 μgm. per ml.). Whereas controls nearly doubled in mean size in 18 days, the mean diameter of treated snails increased from 7·0 mm. to only 7·5 mm. Their survival did not seem to be seriously affected. Egg-laying was observed at a concentration of 100 μgm. of streptomycin per ml.: a group of 25 snails (reduced to 19 snails by the end of the experiment) laid five egg masses in the three weeks following the addition of streptomycin, whereas 25 controls laid 148 egg masses. During 21 days in fresh water following a ten-day exposure to streptomycin the snails which survived did not grow or lay eggs. The effect of the streptomycin was partially blocked by calcium chloride, and the mixture of inorganic salts constituting Chernin's handling solution for rearing snails axenically. M.MCK.

333—American Journal of Tropical Medicine and Hygiene.

a. WYKOFF, D. E. & LEPEŠ, T. J., 1957.—" Studies on *Clonorchis sinensis*. I. Observations on the route of migration in the definitive host." **6** (6), 1061–1065.
b. BROWNE, D. C., CONTACOS, P. G., WELCH, G. E. & MCHARDY, G., 1957.—" Treatment of *Strongyloides stercoralis* infection with intravenous gentian violet." **6** (6), 1066–1067.
c. PIMENTEL, D. & WHITE, Jr., P. C., 1957.—" Geographic distribution of *Australorbis glabratus*, the snail intermediate host of *Schistosoma mansoni* in Puerto Rico." **6** (6), 1087–1096.

(333a) After ligaturing the bile-duct before feeding rabbits with encysted cercariae of *Clonorchis sinensis* and after injecting excysted cercariae directly into the mesenteric vein, the young worms were still capable of reaching the liver and developing to maturity. Although migration from the duodenum into the common bile-duct cannot be entirely ruled out the experiments suggest that the normal route is by penetration of the intestinal mucosa and transference to the liver by the portal system. R.T.L.

(333b) Intravenous injection of 0·5% solution of crystalline gentian violet into 15 patients with strongyloidiasis proved ineffective and caused venous thrombosis, whether made by rapid injection or by drip method. Only nine of the patients were able to complete the 20-day course of treatment owing to the soreness and pain produced. R.T.L.

(333c) In Puerto Rico the density of the *Australorbis* population is largely determined by the type of surface water, the pattern of rainfall distribution and the physical and chemical nature of the geological formation. Whereas large collections of standing water are unsuitable the snails abound in running waters, associated marshes and small ponds. The practice of dumping sewage into adjacent streams and rivers may eliminate the molluscs or may cause their increase by providing food and plays a vital role in the spread of *Schistosoma mansoni* infection. R.T.L

334—Annales de l'Institut Pasteur. Paris.

a. DESCHIENS, R., 1957.—" Les facteurs conditionnant l'habitat des mollusques vecteurs des bilharzioses, leurs incidences épidémiologiques. III. Flore et faune des gîtes, ennemis naturels, maladies compétitions, fluctuations." **93** (1), 1–12.

b. DESCHIENS, R., 1957.—" Les facteurs conditionnant l'habitat des mollusques vecteurs des bilharzioses, leurs incidences épidémiologiques. IV. Constantes physiologiques de la reproduction et particularités en fonction des espèces. Conclusions." **93** (2), 153–167. [English summary pp. 165–167.]

(334a) In this third part of his study of the bionomics and oecology of schistosome intermediaries, Deschiens lists the aquatic plants with which they are usually associated and the protozoa, sponges, coelenterates, annelids, rotifers etc., crustaceans, fish and other snails which occur commonly in the same habitats. He considers their natural predators, pointing out that while the snails would be only rarely eradicated by them, they may play a considerable part in limiting the size of the mollusc population. In the section on diseases he stresses how little is known of viral or bacterial epizootics amongst snails although these must occur much as they do in all animal phyla, and draws attention to the recent work on *Bacillus pinottii* as a means of biological control of schistosome vectors. He also discusses the competition, both between snails of the same species and between related genera occupying the same biotope, and the seasonal fluctuations in populations. S.W.

(334b) In this, the last of his series of papers on the habitats of schistosome intermediaries, Deschiens outlines the physico-chemical and biological characteristics common to the habitats of all these snails and discusses the dependence of the different groups on particular factors and the conditions essential for reproduction. In conclusion he stresses the great value of precise knowledge of the molluscs' oecology and biological requirements in determining the control methods most likely to be successful and points out the possibility of other species becoming adapted as intermediaries, particularly in new foci of schistosomiasis. S.W.

335—Annales Medicinae Internae Fenniae.

a. KAIPAINEN, W. J. & OHELA, K., 1957.—" Urinary excretion of radiovitamin B-12 in pernicious tapeworm anaemia." **46** (2), 49–52.

336—Annales de Parasitologie Humaine et Comparée.

a. TIMON-DAVID, J., 1957.—" Recherches sur le développement expérimental de *Brachylecithum alfortense* (A. Railliet) R. Ph. Dollfus 1954, trématode dicrocoeliidé parasite des voies biliaires de la pie." **32** (4), 353–368.

b. DOLLFUS, R. P., 1957.—" Les Dicrocoeliinae d'oiseaux décrits ou mentionnés en 1900 par Alcide Railliet et quelques autres." **32** (4), 369–384.

c. CHABAUD, A. G. & BRYGOO, E. R., 1957.—" Deux nématodes, parasites de grenouilles à Madagascar: *Falcaustra golvani* n.sp. et *Harentinema ambocaeca* n.gen. n.sp." **32** (4), 385–397.

(336a) Timon-David has experimentally infected *Helicella* (*Helicopsis*) *arenosa* with *Brachylecithum alfortense*. Mother sporocysts were not observed but daughter sporocysts were first apparent 65 days after infection. After a further 30 days they began to show movements of the anterior end and contained small numbers (normally three to five) of developing cercariae. The cercariae were of the *vitrina* type; the tail did not start to be differentiated until about 144 days after infection. No encysted cercariae were seen and the life-cycle has not yet been further elucidated but, by analogy with other dicrocoeliids, it appears likely that a second intermediary is necessary and Timon-David has noticed the frequency with which ants were present in the gut contents of the definitive hosts. The morphology of the sporocyst and cercaria is described and illustrated. S.W.

(336b) Dollfus redescribes a number of dicrocoeliids of birds from specimens in Railliet's collection, now housed in l'École Nationale Vétérinaire d'Alfort, and gives drawings of those which are still sufficiently well preserved. He also compares them with material he has collected at Richlieu (Indre-et-Loire). Among them are *Dicrocoelium clathratum* Deslongchamps

nec Olsson, which Dollfus transferred to *Conspicuum* in 1954, *D. olssoni*, now genotype of *Olssoniella*, *D. longicauda*, now genotype of *Lyperosomum*, and *D. attenuatum* and *D. lobatum*, now in *Brachylecithum*. *Dicrocoelioides* Dollfus, 1954 becomes a subgenus of *Oswaldoia*. *Dicrocoelium macrourum* corresponds exactly with *O.* (*Dicrocoelioides*) *skrjabini*; *D. panduriforme* and *D. petiolatum* also appear to belong to *Oswaldoia* (*Dicrocoelioides*) and become *O.* (*D.*) *panduriformis* n.comb. and *O.* (*D.*) *petiolata* n.comb. Two forms still remain of uncertain position. S.W.

(336c) Chabaud & Brygoo describe and illustrate *Falcaustra golvani* n.sp. and *Harentinema ambocaeca* n.g., n.sp. from *Racophorus* sp. (*R. goudoti* or *R. madagacariensis*) in Madagascar. *F. golvani* is characterized by the weak lips without chitinous strengthening, the elongated pharynx, a cylindrical pre-bulb, a single shallow pre-cloacal pseudosucker, the gubernaculum which is little chitinized and the spicules which are about 1·0 mm. long. One or more of these characters differentiate it from *F. congolensis*, *F. pectinospiculata*, *F. pectinospiculata* var. *eumecis*, *F. rangoonica*, *F. onama* (from which it differs also in the arrangement of the cloacal papillae) and *F. barbi* (which has a marked neck region behind the head); the new species may be distinguished from *F. japonensis* by the shortness of the female tail. *Harentinema ambocaeca* can at once be seen to be atypical; many of its characters resemble those of *Amplicaecum*, others would place it in the Oxyuroidea as defined by Chitwood & Chitwood in 1950, and still others align it with *Cruzia* and *Pseudocruzia*. The authors consider that a definitive classification of this new genus must await knowledge of its biology and they place it, for the present, in the Ascaridina *incertae sedis*. S.W.

337—Annales de la Société Belge de Médecine Tropicale.

a. LASSANCE, M., PEETERS, E. & GRAILET, L., 1957.—" Note sur un taenifuge de masse nouveau, l'Anthiphen." **37** (5), 627–630. [English, German, Spanish & Flemish summaries p. 629.]

b. LEBIED, B., 1957.—" Iconographie de l'évolution intrasyncytiale de *Loa loa* chez *Chrysops*. (Note préliminaire sur les facteurs, interne et externe, déterminants du cycle évolutif des Filariata (Scrjabin) chez leurs hôtes intermédiaires)." **37** (5), 641–645. [English, German, Spanish & Flemish summaries pp. 643–644.]

c. THIENPONT, D. & BICHE, Y., 1957.—" La microfilariose cutanée aiguë des bovidés." **37** (5), 693–695. [English, German, Spanish & Flemish summaries pp. 694–695.]

(337a) Lassance, Peeters & Grailet have tested Anthiphen (5-5′dichloro-2-2′dihydrodiphenyl methane) for the mass treatment of taeniasis in the Ituri region. The dose rate was 0·5 gm. per 16 lb. (about 7·3 kg.) body-weight and of 104 persons treated 96 were cured. Slight colic occurred in 11% of the patients about two hours after treatment but this was the only side effect. Complete *Taenia saginata* were expelled by 74 of the persons about seven hours after treatment. The authors consider Antiphen to be the remedy of choice, particularly for the mass treatment of populations in highly endemic areas. S.W.

(337b) Lebied briefly describes the development of the microfilariae of *Loa loa* in *Chrysops*. The larva becomes situated in a polynuclear cell, formed by the fusion of a number of fat-body cells and termed a filarial syncytium; here it undergoes the metamorphosis to the infective stage, finally killing the containing cell. More than one microfilaria may be enclosed within one syncytium. The development of *Onchocerca volvulus* in *Simulium* appears to be identical but occurs in the thoracic muscle fibres. He discusses the cyto-physiological factors involved and outlines the factors which determine the specific localization of the larvae in the intermediaries and which control their development. S.W.

(337c) Thienpont & Biche describe two cases of cutaneous microfilariasis in cattle at Astrida in Ruanda-Urundi. The lesions were on the front of the head, between the horns, and microscopical examination of the fluid from the dermis in this area showed 10 to 25 microfilariae of *Onchocerca gutturosa* per slide. Healing took place slowly in the animal treated only with mercurochrome (against secondary infections) but more rapidly in the one treated with carbilazine. S.W.

338—Annals of Applied Biology.

a. GRIFFITHS, D. J., HOLDEN, J. H. W. & JONES, J. M., 1957.—" Investigations on resistance of oats to stem eelworm, *Ditylenchus dipsaci* Kühn." **45** (4), 709–720.

(338a) Varieties of oat and segregating progenies were tested for reaction to attack by *Ditylenchus dipsaci* by growing the plants in rows between rows of the susceptible variety S147 in a field heavily infested with the eelworm. Of about 250 forms of oat some new sources of resistance were found in winter types of cultivated species of *Avena sativa* and in some forms of *A. byzantina* and *A. ludoviciana*. True-breeding resistant and susceptible lines could be selected over a period of two years by growing in the field. In crosses involving Grey Winter and susceptible types the inheritance of reaction appeared to depend on a single factor pair in which resistance was dominant. J.B.G.

339—Annals of Tropical Medicine and Parasitology.

a. SMITHERS, S. R., 1957.—" The occurrence of *Schistosoma mansoni* in the Gambia." **51** (4), 359–363.
b. DUKE, B. O. L., 1957.—" A case of 'streptocerciasis' in a European." **51** (4), 364–367.
c. HYNES, H. B. N. & NICHOLAS, W. L., 1957.—" The development of *Polymorphus minutus* (Goeze, 1782) (Acanthocephala) in the intermediate host." **51** (4), 380–391.
d. GILLMAN, T., 1957.—" Venous obstruction in the pathogenesis of hepatic bilharziasis. A preliminary report of comparative findings in rats, monkeys and man." **51** (4), 409–416.
e. WHARTON, R. H., 1957.—" Studies on filariasis in Malaya: the efficiency of *Mansonia longipalpis* as an experimental vector of *Wuchereria malayi*." **51** (4), 422–439.

(339a) *Schistosoma haematobium* is wide-spread in the eastern parts of the Gambia but *S. mansoni* is now reported for the first time. Foci have been discovered at the villages Jiborah, Darsilami, Busura and Kiti. The infections were generally mild. The vector is *Biomphalaria pfeifferi gaudi*. R.T.L.

(339b) An itching eruption commencing on the left forearm and spreading, during the following months, to the upper arm, left scapular region and across the right scapula occurred in an Englishman who had been stationed for two years at Kumba in the British Cameroons and in Ashanti three years previously. Skin snips gave one microfilaria (fragment) from the left forearm, one (immobile) from the left deltoid and eight (active) microfilariae from the left scapula. The microfilariae were identified as those of *Acanthocheilonema streptocerca*. As the symptoms were probably due to *A. streptocerca* infection a course of banocide was administered. By the fifth day the affected areas became hot, red, swollen, itchy and tender, and red papules appeared over other parts of the body, followed later by symptomatic relief. R.T.L.

(339c) The development of *Polymorphus minutus* in *Gammarus pulex* from the ingestion of the egg to the attainment of the infective stage is described in detail and is figured. R.T.L.

(339d) Bilharzial cirrhosis is not attributable to isolated pseudotubercles around eggs but results from progressive obstruction of intrahepatic portal radicles induced by endo- and peri-phlebitis caused by the eggs or dead worms. When these lesions result in scar tissue its contraction may later cause a gradual obstruction of the large hepatic portal veins with death of liver tissue and eventually the formation of pipe-stem cirrhosis. Dead worms are probably more important than the eggs as pathogens as they produce more extensive and severe reactions. In the rat, cirrhosis and changes in the spleen are absent, although the liver shows gross damage, while in the monkey splenic changes appear early. Although the incidence of intestinal bilharziasis is high in Egyptians and in Africans, its greater severity in Egyptians may be attributable to the greater number of spontaneous deaths in the worms. It is pointed out that although treatment may alleviate acute intestinal symptoms and reduce the number of eggs passed in the faeces, the patient may subsequently develop severe portal cirrhosis and progressively obstructive fibrotic lesions elsewhere from the presence of dead worms carried into the liver. R.T.L.

(339e) From experimental feeding of *Mansonia* (*Mansonioides*) *longipalpis* on human carriers of *Wuchereria malayi* Wharton has established that the mean number of larvae in the mosquitoes when dissected 10·5 to 11 days later is approximately five times the number of microfilariae per cu.mm. in the peripheral blood, and that the percentage of those which become infected is related to the microfilarial density, 12% becoming infected from a carrier with 0·025 microfilariae per cu.mm., and 100% from carriers with two microfilariae or more per cu.mm. Mosquitoes died rapidly on and after the eighth day when fed on carriers with over 10·7 microfilariae per cu.mm. The range of individual susceptibility of the mosquitoes was wide although none were completely inhospitable to infection. There was no difference in the viability of microfilariae for different persons and microfilariae developed normally in a mosquito when fed on a patient who had received a dose of diethylcarbamazine five hours previously. R.T.L.

340—Antioquia Médica. Medellín.

a. CORREA HENAO, A., 1957.—" Lesiones por *Ascaris lumbricoides* erráticos." **7** (3), 144–153.

(340a) The author gives ten case reports of granulomata and abscesses caused by eggs of migrating Ascaris. Similar granulomata were produced when he injected Ascaris eggs into the livers of guinea-pigs. The emergence of specimens of Ascaris through an artificial puncture in the umbilicus of a baby and through a hernia in a man are illustrated with photographs. M.McK.

341—Archives Belges de Médecine Sociale, Hygiène, Médecine du Travail et Médecine Légale.

a. NOEL, A., 1957.—" Contribution à l'étude de la thérapeutique de l'ankylostomiase." **15** (2), 104–107. [English summary p. 104.]

(341a) Noel reports that he has cured completely 42 out of 50 cases of ancylostomiasis, using the following method of treatment. A mixture of 200 mg. of thymol per year of age (maximum of 3 gm.) as a 1% solution in water at 37° C., 10 gm. Epsom salts and 10 c.c. castor oil per gm. thymol and one drop of chenopodium oil per year of age (maximum 25 drops) is administered by duodenal sound; the rate of flow is regulated so that intubation continues for two hours. Efficacy was increased when 250 c.c. of 5% aqueous sodium bicarbonate solution was intubated rapidly, immediately before the anthelmintic solution. S.W.

342—Archives of Disease in Childhood.

a. DURAN-JORDA, F., 1957.—" Appendicitis and enterobiasis in children. A histological study of 691 appendices." **32** (163), 208–215.

(342a) Duran-Jorda postulates two migratory phases of *Enterobius vermicularis* in the appendix, viz., one by the larva from the lumen into the tissues and later by the fully mature worm returning into the lumen. The worms can occupy the mucous membrane or burrow beneath it, parasitize the middle of the lymphoid follicle or invade the peritoneal layer, forming a cyst. The various tissues of the appendix show no undue cellular reaction to the parasite, the damage being mechanical when the larvae burrow into the semi-squamous epithelial layer and when the adult worms return to the lumen, but on both occasions there is great danger of infection by intestinal flora from the lumen. The light of a mercury vapour lamp assists in the detection of the ova as these are fluorescent. R.T.L.

343—Archives de l'Institut Pasteur d'Algérie.

a. DOLLFUS, R. P., 1957.—" Présence accidentelle d'une larve de cestode tétrarhynque chez un ophidien terrestre d'Algérie." **35** (2), 70–72.

(343a) Dollfus describes and figures a larva of *Otobothrium* (*Otobothrium*) sp. from a snake, *Aspis cerastes*, from Algeria. He believes it to be the first tetrarhynch larva to have been found in a terrestrial reptile. M.McK.

344—Archives de l'Institut Pasteur du Maroc.

a. DOLLFUS, R. P. & CHABAUD, A. G., 1957.—" Miscellanea helminthologica maroccana XXIII. Nématodes d'otidiformes." **5** (7), 408–446.

b. CHABAUD, A. G. & GOLVAN, Y. J., 1957.—" Miscellanea helminthologica maroccana XXIV. Nématodes parasites de lézards de la forêt de Nefifik." **5** (7), 447–469.

(344a) The following nematodes are recorded from Morocco: *Hartertia rotundata* in *Tetrax tetrax* (a new host) and *Choriotis arabs*, and *Subulura* sp. No. 1 in *Choriotis arabs*. *Subulura* sp. No. 2 is reported from *Neotis cafra* in the French Sudan. Whether or no *Subulura suctoria* is a parasite of Otidiformes and if the descriptions of African specimens are attributed rightly or wrongly to *Subulura suctoria* by various authors, are discussed. Barreto's omission (1918, 1919) of Otidiformes from among the hosts of this species is considered to have been justified. R.T.L.

(344b) Chabaud & Golvan record the presence in lizards in Morocco of: *Pharyngodon auziensis* in *Tarentola m. mauritanica*; *Thubunaea pudica* in *Agama bibroni*, *Lacerta lepida*, *Psammodromus algirus* and *Eumeces algeriensis*; *Pharyngodon* sp. in *Psammodromus algirus*; *Pharyngodon mamillatus* in *E. algeriensis*; *Spirura gastrophila seurati* in *Agama bibroni* and *E. algeriensis*; *Thelandros echinatus* in *Tarentola m. mauritanica*; *Thelandros alatus* and *Tachygonetria vivipara* in *Uromastix acanthinurus*; *Thelandros bulbosus* in *Chalcides mionecton* and *C. ocellatus polylepis*; *Thelandros* sp. in *Ophisaurus koellikeri* and *Strongyluris icosiensis* in *Gongylus* sp. *Pharyngodon mamillatus* is now figured and described in detail. They list six species of *Pharyngodon* of which only the females are known. A dichotomous key is given for the 30 species of which both males and females are known. The authors observed in *Thelandros bulbosus* three different types of lateral alae which do not correspond to those described by Seurat but as these probably are the result of fixation the variety *annualatus* (*Oxyuris annulata* Linstow) is considered a synonym of *T. bulbosus* and *T. micipsae* a synonym of *T. echinatus*. *Pharyngodon tectipenis* Calvente, 1948 *nec* Gedoelst, 1919 is renamed *P. paratectipenis* nom.nov. R.T.L.

345—Archives of Pathology.

a. ALLEN, A. M., 1957.—" Pulmonary hydatid disease in a rhesus monkey." **64** (2), 148–151.

346—Archives of Surgery. Chicago.

a. COGBILL, C. L., 1957.—" Echinococcus cyst." **75** (2), 267–271.

347—Arizona Medicine.

a. BUSSE, E. A., 1957.—" Trichinosis myalgia: its control and treatment with repository tubocurarine. A case report." **14** (1), 15–16.

348—Arkhiv Patologii. Moscow.

*a. NAGORSKII, P. M. & DESYATOV, V. P., 1957.—[A lethal case of primary echinococcosis of the heart.] **19** (3), 61–63. [In Russian.]

349—Arzneimittel-Forschung. Aulendorf.

a. AUTERHOFF, H. & ERHARDT, A., 1957.—" Tierexperimentelle Untersuchungen zur Frage der Testung von Wurmmitteln." **7** (2), 143. [English summary p. 143.]

b. OELKERS, H. A., 1957.—" Zum Mechanismus der anthelmintischen Wirkung des Piperazins." **7** (5), 329–330. [English summary p. 330.]

(349a) Auterhoff & Erhardt report that *in vitro* tests, using pig *Ascaris lumbricoides*, had shown 2,4-dioxydesoxybenzoin to be a promising anthelmintic. Tests on infected cats however were disappointing: against Ancylostoma and Taenia doses of 0·1 gm., 0·25 gm. and 0·5 gm. were all ineffective, and against Toxocara 0·1 gm. was ineffective, 0·25 gm. only 27% effective

and 0·5 gm. 60% effective. Against oxyurids in rabbits even a dose of 2·0 gm. per kg. body-weight had no effect. The higher doses caused vomiting in the cats. It is concluded that 2,4-dioxydesoxybenzoin is not suitable for use in human medicine. A.E.F.

(349b) Oelkers has carried out a series of tests in an attempt to determine the mechanism of the anthelmintic action of piperazine. Enchytraeids, earthworms, leeches, and *Fasciola hepatica* withstood high concentrations without damage. In *Ascaris lumbricoides*, and to a lesser extent in *Enterobius vermicularis* and *Aspiculuris tetraptera*, complete paralysis was caused; when affected worms were placed in Ringer's solution they appeared to recover after eight hours. A reversible paralysis was also produced in nerve muscle preparation of earthworms and leeches by relatively low concentrations of piperazine. A.E.F.

350—Australian Journal of Agricultural Research.

a. ROBERTS, F. H. S., 1957.—"Reactions of calves to infestation with the stomach worm, *Haemonchus placei* (Place, 1893) Ransom, 1911." **8** (6), 740–767.

(350a) Roberts reports observations on 400 calves naturally infected with *Haemonchus placei* and on experimentally infected calves. Most of the former developed a strong resistance and suffered no obvious ill effects, some did not become resistant until they had shown clinical symptoms of disease and others (about 8%) either failed to develop resistance or lost it and died. Although circulating antibodies were found, these were in cases of mixed natural infections and were more probably associated with *Trichostrongylus* than with *Haemonchus*. In calves experimentally infected with single doses, several spaced doses or continuous doses of *H. placei* larvae the patent period was shown to be comparatively short, the faecal egg counts reaching their peak about the sixth to tenth weeks and then declining rapidly to a low level. Even a single dose of larvae was sufficient to produce a strong resistance. Post-mortem examination of resistant animals showed the presence of numerous fourth-stage larvae which had remained at that stage for many weeks. "Self-cure" could not be induced experimentally but there is some evidence that it may occur occasionally in natural populations before resistance is firmly established. The paper is illustrated with numerous graphs and tables. S.W.

351—Australian Journal of Science.

a. MACKERRAS, M. J., 1957.—"*Capillaria* in the spleen of the rat (Nematoda: Trichuroidea)." [Correspondence.] **19** (6), 230.

(351a) In sections of the spleen of a *Rattus rattus* from New Guinea there were numerous eggs and portions of a female *Capillaria* sp. The adults were slimmer in cross section than those of *C. hepatica* from *R. norvegicus* in Brisbane, and the eggs were larger, measuring 70 μ × 27 μ when teased from adults in lactophenol and about 64 μ × 26 μ when measured *in situ* in the sections. The spleen tissue showed no obvious reaction to the parasite. R.T.L.

352—Berliner und Münchener Tierärztliche Wochenschrift.

a. SCHEBITZ, H. & HANSEN, H. J., 1957.—"Durch *Spirocerca sanguinolenta* verursachte Rückenmarkskompression beim Hund." **70** (24), 503–506. [English summary p. 506.]

(352a) The post-mortem examination of a dog which had become lame in the hind quarters, incontinent and unable to eat, revealed that two oesophageal granulomata had formed as a result of *Spirocera lupi* infection. These had produced fusion of some of the vertebrae and caused the disc and epiphyses between the 10th and 11th vertebrae to protrude as a soft fused mass into the spinal canal. M.MCK.

353—Biologie Médicale.

a. SAVEL, J., 1957.—" Les phénomènes d'immunité dans les helminthiases. Leur part dans la symptomatologie, leur utilisation en vue du diagnostic." **46** (3), 289–323.

(353a) Savel reviews the considerable advances which have been made recently in research into the phenomena of immune reactions in helminth diseases and discusses their significance in symptomatology and their use in diagnosis. He describes the development of blood and tissue eosinophilia, the influence on this of the parasite and the host and of the localization of the parasite within the host, and the formation of precipitates around living larvae in immune serum. In the latter part of his paper he describes the use of agglutination, precipitation, complement fixation and intradermal reactions in diagnosing helminthic infections. In an addendum he draws attention to the work of Coudert & Coly (published in *Ann. Parasit. hum. comp.*, 1956, **31,** 489–499) on the agglutination of particles of collodion in some parasitic diseases, and of Galliard on visceral larva migrans (published in *Pr. méd.*, 1957, **65,** 916–918.) S.W.

354—Boletín Chileno de Parasitología.

a. DONOSO, F. & ATÍAS, A., 1957.—" El tratamiento de ascaridiasis con adipato de piperazina. (Nota preliminar)." **12** (4), 67–69. [English summary p. 67.]
b. NEGHME, A., 1957.—" Nociones generales sobre las parasitosis intestinales." **12** (4), 69–70. [English summary p. 69.]
c. DONOSO, F., 1957.—" Drogas de elección en el tratamiento de las enteroparasitosis de los niños." **12** (4), 71–72. [English summary p. 71.]

(354a) Thirteen out of 15 persons infected with *Ascaris lumbricoides* were negative ten days after receiving 80 mg. of piperazine adipate per kg. body-weight, daily, for three days. M.MCK.

(354b) In this lecture, Neghme notes that the intestinal helminths reported from man in Chile are *Ascaris lumbricoides*, *Ancylostoma duodenale*, *Strongyloides stercoralis*, *Trichinella spiralis*, *Enterobius vermicularis*, *Trichuris trichiura*, *Trichostrongylus* sp., *Hymenolepis nana*, *H. diminuta*, *Diphyllobothrium latum*, *Taenia saginata*, *T. solium* and *Dipylidium caninum*. M.MCK.

(354c) For the treatment of intestinal helminth infections in children Donoso recommends, and gives the dosages of, piperazine hexahydrate, citrate and adipate against *Ascaris lumbricoides* and *Enterobius vermicularis*, piperazine adipate against *Trichuris trichiura* and acridine derivatives against *Taenia saginata*, *T. solium* and *Diphyllobothrium latum*. No drug is known to be efficient against *Hymenolepis nana* infections. M.MCK.

355—Bollettino della Società Italiana di Biologia Sperimentale.

a. FORNI, P. V., 1957.—" Liquido perienterico di ascaride e fattori ipotermizzanti." **33** (3), 308–310.

(355a) The injection of the perienteric fluid of *Parascaris equorum* into guinea-pigs at the rate of 1 ml. per kg. body-weight caused an average fall in body temperature of 4·025°C. per hour per kg. body-weight and of 0·227°C. per hour per sq. dm. of body surface. The hypothermic effect of injections of insulin or adrenalin when given in conjunction with injections of the ascarid perienteric fluid was much reduced. M.MCK.

356—British Journal of Pharmacology and Chemotherapy.

a. GORVIN, J. H., RAISON, C. G., SOLOMON, W., STANDEN, O. D. & WALLS, L. P., 1957.—" The action of substances analogous to diaminodiphenoxyalkanes against *Schistosoma mansoni*." **12** (3), 329–335.

(356a) Gorvin *et al.* report on an investigation of the activity against *Schistosoma mansoni* in mice of a large number of modifications of the diaminodiphenoxylkanes. The drugs were

all given orally. They found that replacement of the amino group by any of a large number of other groups destroyed activity. Activity was retained in the presence of certain substituted (hydroxyalkyl and carboxyalkyl) amino groups and in some of their aldehyde-bisulphite derivatives. Many variations of the central chain led to a reduction in activity with the exception of a number of but-2-ene derivatives. The compounds tested, the doses and the proportions of worms killed are given in tabular form. S.W.

357—British Veterinary Journal.

a. SOULSBY, E. J. L., 1957.—" Precipitin and intradermal tests in *Ascaris lumbricoides* infection in pigs." **113** (12), 492–498.

(357a) Soulsby prepared two *Ascaris* antigens, one a saline extract of intestine for use in skin tests and the other a polysaccharide from whole worms for precipitin tests. Both antigens were heat-stable. The sera from blood collected at slaughter of 93 pigs were examined and 180 pigs were subjected to skin tests. All were examined post mortem for *A. lumbricoides* and other infections. There was no correlation between the presence of adult Ascaris and positive reactions but the incidence of positive reactions to both tests appeared to be directly related to the severity of the chronic, focal interstitial hepatitis. The significance of this is discussed. Infection with *Metastrongylus apri* or *Oesophagostomum dentatum* did not appear to influence the reactions. S.W.

358—Bulletin de l'Académie Nationale de Médecine. Paris.

a. KISSEL, P., 1957.—" Recrudescence actuelle de la distomatose hépatique en France. Recherche des facteurs qui expliquent cette recrudescence." 3e Série, **141** (11/12), 231–235.
b. MARILL, F. G., 1957.—" Diffusion de la bilharziose à *Schistosoma haematobium* en Haute-Volta." 3e Série, **141** (19/20), 398–401.

(358a) Kissel describes a case of fascioliasis in a 34-year-old woman. The first symptoms appeared six days after she had eaten wild water-cress picked in an area where 80% of the sheep were infected; this is the shortest incubation period hitherto reported. Two of her three children were also infected. All were cured by treatment with emetine. Kissel reiterates the dangers of eating contaminated cress and the need for legislation to prevent its sale and to control its cultivation. S.W.

(358b) Marill has carried out a survey of the incidence of schistosomiasis haematobia amongst the inhabitants of 19 villages in the Houndé area of the Upper Volta. The urine of 1,308 persons, of whom most were between five and 15 years old, was examined and 409 were found to be infected. The rate of infection varied from 10% to almost 100% and not one of the villages visited was entirely free from infection. These facts, taken in conjunction with his malacological investigations which indicated that *Biomphalaria* is extremely wide-spread and abundant, lead him to the conclusion that the whole of the Volta Plateau, extending from the Niger in the French Sudan, is an endemic zone for schistosomiasis. S.W.

359—Bulletin of the British Museum (Natural History). Zoology.

a. WRIGHT, C. A., 1957.—" Studies on the structure and taxonomy of *Bulinus jousseaumei* (Dautzenberg)." **5** (1), 28 pp.

(359a) From a biometrical study of the shell, an investigation of the structure and anatomy of the mantle, radula, central nervous system and circulatory blood system and the development and histology of the reproductive system, together with a comparison with related forms, Wright concludes that *Bulinus jousseaumei* from Senegal and Gambia is a subspecies of *B. globosus*, representing the northernmost representative of a cline of the typical form. He places *B. hemprichii depressus* in the synonymy of *B. globosus* and questions the validity of *B. globosus ugandae*. The paper is clearly illustrated with line drawings and photographs, and graphs, histograms and tables. S.W.

360—Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris.

a. JARNIOU, A. P. & MOREAU, A., 1957.—" Eosinophilie pulmonaire tropicale et filariose." 4e Série, **73** (11/13), 316–329.

(360a) Jarniou & Moreau discuss Weingarten's syndrome and the published work on the part played by parasites and particularly filariae in its aetiology. They then describe two cases which had failed to yield to treatment for bronchitis, asthma etc., which were found to have microfilariae of *Wuchereria malayi* in the night blood. Treatment with notezine resulted in complete cure in both cases. There is comprehensive bibliography. S.W.

361—Bulletin. Ministry of Agriculture, Fisheries and Food. London.

a. JONES, F. G. W., 1957.—" Sugar beet pests." No. 162, vi+63 pp.

(361a) In the eelworm section of this Bulletin (pp. 39–54), Jones deals with the beet eelworm (*Heterodera schachtii*) problem in detail, under the following headings: life cycle; host range and efficiency, and effects of various crops and crop sequences on eelworm numbers; distribution and spread; control by soil fumigants (uneconomic in Britain, although successful in warmer climates), trap-cropping (unsuccessful so far, but still under investigation), and crop rotation and quarantine measures (necessary evils enforced by legislation to reduce existing infestations to safe levels and to retard the inevitable spread which, judging from the history of dissemination in Germany and the U.S.A., should reach wide-spread proportions in Britain between 1970 and 1980). Root-knot nematodes (*Meloidogyne* spp.) are not important pests of outdoor crops in Britain, although one infestation, probably of *M. hapla*, has been reported from sugar-beet on light sandy soil in East Anglia. Beet canker due to stem eelworm (*Ditylenchus dipsaci*) is dealt with under the headings of nematode life-cycle, crop symptoms, host range and effect of crops and weeds on infestation levels. As control measures, growing of beet after heavily infested oats or onions should be avoided, attacked seedlings hoed out, and affected crops lifted and processed as early as possible. *D. destructor*, a possible cause of beet canker on the continent, has not been found on sugar-beet in the field in Britain. The section is illustrated by distribution maps, diagrams, graphs, and black-and-white and colour photographs. R.D.W.

362—Bulletin of the National Society of India for Malaria and other Mosquito-Borne Diseases.

a. SINGH, J. & RAGHAVAN, N. G. S., 1957.—" Dracontiasis in India. Its public health importance and control." **5** (3), 141–160.

b. PILLAY, M. K. & MENON, M. A. U., 1957.—" Filariasis in the State of Kerala. (A retrospect)." **5** (3), 191–195.

(362a) The different aspects of dracontiasis as it occurs in India are summarized from the literature, viz., its geographical distribution, the Indian intermediate hosts, pathogenicity, clinical features and epidemiology (age, sex and seasonal incidence, infestation rate and duration of attack). The magnitude of the infection as a public health problem is not yet fully recognized by the administrator although the economic loss is enormous. In endemic areas its effects seriously interfere in agricultural operations owing to the resulting scarcity of labour. Treatment is only symptomatic. Preventive measures so far carried out in India are attempts to deny access to infected water, the use of various methods of eliminating the cyclopid vectors and the treatment of infected persons. Reference is made to the promising results obtained in Africa by Roussett from the use of diethlcarbamazine as a prophylactic against guinea-worm infection. R.T.L.

(362b) As elephantiasis is an ancient malady in the State of Kerala, Pillay & Menon cite early theories and superstitions about its origin and briefly summarize later statistics on its incidence and scientific observations on its transmission in the State of Travancore. R.T.L.

363—Bulletin de la Société de Pathologie Exotique.

a. DEBLOCK, S. & CAPRON, A., 1957.—" Le parasitisme intestinal en milieu psychiatrique dans le nord de la France. II. Les parasitoses détectées par l'examen coprologique de 536 malades dont 524 adultes. Considérations sur la transmission de quelques parasites à formes de dissémination immédiatement infestantes." **50** (4), 533–537.

b. OVAZZA, M., 1957.—" Présence de simulies du 'groupe *neavei*' au Moyen-Congo, Afrique Equatoriale Française." **50** (4), 537–539.

c. LE CORROLER, Y., 1957.—" Evolution de *Dirofilaria immitis* Leidy 1856 chez *Aëdes* (*Stegomyia*) *aegypti* Lin. souche 'Orlando' (Floride)." **50** (4), 542–555.

d. HERVÉ, P. A., PIGANIOL, G. & TEYSSANDIER, 1957.—" Les complications génitales de la bilharziose urinaire chez l'homme." **50** (4), 567–573.

(363a) In this survey of intestinal parasites in patients in the Psychiatric Hospital at Armentières, Deblock & Capron found that of the 536 persons examined 46 were infected with *Trichuris trichiura*, eight with *Ascaris lumbricoides*, seven with *Hymenolepis nana* and one with *Taenia saginata*. The possible reasons for this unexpectedly high incidence of *H. nana* are discussed. S.W.

(363c) Le Corroler has demonstrated that, under experimental conditions, *Aëdes* (*Stegomyia*) *aegypti* strain "Orlando" from Florida is a satisfactory intermediate host for *Dirofilaria immitis*, in contrast with the Cuban strain of the same species which is not. He found that it was essential for the mosquitoes to be fed between the blood meals; infected mosquitoes were more sensitive to fasting than uninfected ones. The maximum number of filarial larvae recovered from a single mosquito was 20. Data on the techniques, the mortality of the mosquitoes and the development of the larvae are given and the different stages are illustrated by photomicrographs. S.W.

364—Bulletin. State Plant Board of Florida.

a. SUIT, R. F. & DuCHARME, E. P., 1957.—" Spreading decline of citrus." **2** (11), 1–24.

b. JONES, H. L., 1957.—" Spreading decline." [21st Biennial Report of the State Plant Board of Florida, 1954–56.] **2** (11-A), 29–38.

c. CHITWOOD, B. G., 1957.—" Nematology Department." [21st Biennial Report of the State Plant Board of Florida, 1954–56.] **2** (11-A), 103–107.

(364a) The burrowing nematode, *Radopholus similis*, is figured and its mode of attack described. Spreading decline is dealt with under the following headings: History and Distribution, Economic Importance, Symptoms and Cause, Spread, Rootstocks, Control, Host plants and suspected host plants in Florida, Host plants in other parts of the world, Physiologic races and the Progress of the control programme. J.B.G.

(364b) After a brief history of spreading decline disease in Florida, its survey and treatment, the article deals with the monetary grants for the work, the current programme, survey results in tabular form, certain legal cases and the handling of nurseries in relation to the burrowing nematode. J.B.G.

(364c) After a few paragraphs on personnel, the activities of each member are listed coming under these main headings: service work, routine samples, examination and determination, and survey and experimental work. A list of genera is given in which nematodes associated with plants are classified according to their feeding habits and effects on plants. There are some figures of *Meloidodera floridensis*. Among special projects, some details are given of hot-water treatment of citrus stock, cover crop and host plant studies and the effects of various nematicides, Nemagon, VC–13 and Vapam, on established citrus stock. J.B.G.

365—Byulleten Eksperimentalnoi Biologii i Meditsini.

a. KROTOV, A. I., 1957.—[Content of acetylcholine-like substances and cholinesterase in Ascaris tissues." **43** (2), 95–97. [In Russian: English summary p. 97.]

(365a) Acetylcholine in 10^{-11} dilution, applied to the lips and tail of ascarids, caused sharp contractions of the worms and when pre-treated with proserine they became sensitive

even to 10^{-20} to 10^{21} dilutions. Body fluid and cutaneous-muscle extracts from ascarids stimulated whole ascarids and isolated dorsal muscles from leeches only when the worms used for extracting had been pre-treated for two hours with proserine. Ascarid extracts in various amounts were added to 10^{-7} acetylcholine and the solution tested five hours later on proserine-treated leech muscles. The acetylcholine was completely inactivated by body fluid at 1:10 dilution, by extracts from the head ganglia at 1:1,000 dilution and by extracts from the lips at up to $1:10^{5}$ dilution, showing that choline esterase is present in ascarids and particularly in the sensory terminals and nerve cells. G.I.P.

366—California Citrograph.

a. BAINES, R. C., 1957.—" Results with Vapam to control nematodes, fungi." **42** (6), 192, 202, 204, 206–209.

(366a) Vapam was applied to the soil in water contained in metal rings which had been driven into the soil. When 274–500 lb. of Vapam per acre were applied in 6–12 surface inches of water the citrus nematode, *Tylenchulus semi-penetrans* was effectively controlled. The brown rot fungi, *Phytophthora* spp., were killed by 400 lb. of Vapam per acre applied in 5–6 inches of water. Application of Vapam by injection together with sprinkling or irrigation failed to give control of the nematodes or fungi. H.R.W.

367—Canadian Journal of Comparative Medicine and Veterinary Science.

a. ANON., 1957.—" Diagnosis of heartworm disease in dogs." **21** (12), 420–421.

368—Canadian Journal of Zoology.

a. KHAN, M. A., 1957.—" *Sphaerularia ungulacauda* sp.nov. (Nematoda: Allantonematidae) from the Douglas fir beetle, *Dendroctonus pseudotsugae* Hopk., with key to *Sphaerularia* species (emended)." **35** (6), 635–639.

b. RONALD, K., 1957.—" The metazoan parasites of the Heterosomata of the Gulf of St. Lawrence. II. *Entobdella curvunca* sp.nov. (Trematoda: Capsalidae)." **35** (6), 747–750.

(368a) *Sphaerularia ungulacauda* n.sp., parasitizing the bark beetle *Dendroctonus pseudotsugae*, is described and figured. It differs from the other three species in the knobbed look of the head, granular appearance of the uterus, claw-like terminus of the male tail, and anterior extension of the bursa to the spicule heads. *Sphaerularia* Dufour, 1837 is redefined. A key to the species is given separately for both males and females. Observations suggest that the male emerges from the beetle in the pre-adult state, moults and fertilizes the female in the free-living state and the female then parasitizes another beetle. J.B.G.

(368b) *Entobdella curvunca* n.sp., found on 14 of 57 specimens of the common halibut, *Hippoglossus hippoglossus*, from the Gulf of St. Lawrence, is characterized by the shape of the curved roots of the second and third pairs of hooks on the opisthaptor. Ronald tabulates the body measurements and the morphology of the hooks of *E. bumpusii*, *E. curvunca*, *E. hippoglossi* and *E. squamula*. M.MCK.

369—Canadian Medical Association Journal.

a. SAINT-MARTIN, M. & DUSSAULT, R., 1957.—" A severe case of anaemia due to *Ankylostoma duodenale*." **77** (1), 34–37.

(369a) Only one case of indigenous hookworm infection in Canada has been reported in the literature. The case of severe hookworm anaemia now reported was treated in Hôtel-Dieu Hospital but the patient had in the previous year immigrated from Italy where she had worked barefooted in the tomato fields and had experienced intense transient itching of the feet. R.T.L.

370—Ceylon Medical Journal.

a. PAUL, M. & FERNANDO, M., 1957.—" Hydatid cysts in Ceylon." **4** (2), 51–59.
b. GABRIEL, A., 1957.—" Hydatid cyst of the liver. (Report of a case)." **4** (2), 61–64.
c. PAUL, A. T. S., 1957.—" Hydatid disease of the lungs and liver. (Report of a case)." **4** (2), 65–68.
d. DISSANAIKE, A. S., 1957.—" Some preliminary observations on Echinococcus infection in local cattle and dogs." **4** (2), 69–75.
e. JAYEWARDENE, L. G., 1957.—" A study of parasitic infection in school children." **4** (2), 99–106.

(370a) Only six human cases of hydatid have been admitted to the General Hospital in Colombo during the past thirty years, viz., one in 1949, one in 1952, two described in this paper by Paul & Fernando, one by Gabriel [see No. 370b below] and one by Paul [see No. 370c below]. All the cases were apparently Indians. R.T.L.

(370b) Gabriel reports on a case of hydatid cyst of the liver of an Indian Tamil who had lived in Ceylon for the past 20 years. Complete excision of the cyst was impossible because of severe haemorrhage. All clear hydatids and cheesy material were removed and the cyst was drained. S.W.

(370c) Paul describes a case of pulmonary hydatid in a South Indian woman resident in Ceylon. Dyspnoea was a marked symptom and as the cysts were not unduly large mechanical pressure could not account for this entirely. Surgical treatment was successful but the cysts in the liver could not be removed as the patient refused to undergo a further operation. S.W.

(370d) Although no indigenous case of hydatid in man in Ceylon has been reported, Dissanaike has found hydatid cysts in 22 out of 4,369 cattle slaughtered in Colombo. The great majority of the infected animals came from the Anuradhapura district in the North Central Province of Ceylon, and a few came from Mannar. Adult *Echinococcus granulosus* were found in one out of 27 dogs impounded in Colombo. Hydatid cysts were present in 11 out of 460 imported sheep and goats slaughtered at the Kew Point Quarantine Station and Slaughterhouse on Slave Island. R.T.L.

(370e) Statistical data are presented which show that whereas in Ceylon Ascaris is the predominant helminth in urban children, and latent infections with hookworm were frequently detected by M.I.F.C. tests, hookworm is the dominant infection in rural children. Jayewardene considers that education in proper sanitary measures in the only permanent solution to the helminthiasis problem in Ceylon. R.T.L.

371—Chinese Medical Journal. Peking.

a. KUO, Y. H. & MAO, S. P., 1957.—" On the taxonomy of *Oncomelania*—snail host of *Schistosoma japonicum*: morphological studies of *Oncomelania* snails from different endemic areas in China." **75** (10), 824–831.

(371a) Kuo & Mao found no feature of taxonomic value in the shell, radula or nervous system of *Oncomelania* specimens collected in eleven provinces where schistosomiasis japonica prevails in China. They suggest that the term *O. hupensis* be used at present for all *Oncomelania* snails involved in the transmission of schistosomiasis japonica in China. M.McK.

372—Chinese Medical Journal. Taipei.

a. FAN, P. C. & HSU, J., 1957.—" Filariasis in Free China. Part III. Incidence in Penghu Chinese." **4** (1), 35–48. [Chinese summary p. 48.]

(372a) The incidence of *Wuchereria bancrofti* in 1,529 native Chinese in 13 villages on the three main islands of the Pescadores was 11·68%, 13·52% and just over 15%. Examination of 20 cu.mm. of blood gave 0–10 microfilariae in 33·49%, 11–100 in 47·68%, 101–250 in 4·68% and over 250 in 4·59%. In addition three of 136 schoolchildren and six of 109 inmates of a poor-house had microfilariae. The incidence has apparently risen since Yokogawa's record of infection in 7·84% of the inhabitants in four villages in the Pescadores Islands in 1939.

Two tables show the incidence of filariasis carriers according to family and its erratic distribution by age and sex in the same family. M.MCK.

373—Deutsche Landwirtschaft.

a. KALBE, I., 1957.—" Welchen Einfluss hat verpilztes Futter auf Darmparasiten unserer Haustiere?" **8** (2), 90–93.
b. MEYER, H., 1957.—" Bekämpfung der Leberegelseuche." **8** (3), 143–144.

(373a) Kalbe reports on a series of tests designed to determine the effect of "Pilzfutter" on the worm burden of pigs and horses. This method of preparing fodder was described by Rohde in 1953: hulled grain or bran is mixed with from 40% to 70% of its weight in water and left for three or four days during which the temperature of the food reaches about 60°C. and large numbers of yeasts and moulds develop. This "Pilzfutter" is said to be rich in enzymes, vitamins and antibiotics; it is readily taken and well digested by most farm animals. Full details of all the experiments are not given but in the case of pigs, most animals were free of helminths (including Oesophagostomum, Ascaris and Trichuris) by the 42nd day after feeding with "Pilzfutter": the majority were cured by the 28th day. Horses were also practically freed of parasites after being fed on "Pilzfutter". Development of Trichinella in mice given this food is inhibited: of five mice given "Pilzfutter" and later fed on trichinous meat, four remained free of infection and in the fifth a single larva was recovered from the diaphragm. A further study is to be made of the effective anthelmintic components of "Pilzfutter." A.E.F.

(373b) Meyer, writing as a farmer and an agricultural adviser, lays down the main principles on which control of liver-fluke infection should be based. Co-operation between farmer, veterinarian and water authority is essential to ensure that the disease is recognized and properly dealt with and that the snail intermediary is destroyed. A.E.F.

374—Deutsche Tierärztliche Wochenschrift.

a. RAETHEL, H. S., 1957.—" Über Askaridiasis mit ungewöhnlichen Folgen beim Halsbandpekari (*Pecari tajacu* L.)." **64** (24), 594–596.

(374a) Although the faeces of a collared peccary which died suddenly at the Berlin Zoo had been negative for Ascaris, death had resulted from heavy Ascaris infection. Worms had entered the bile-duct and main pancreatic duct and pierced through them into the abdominal cavity, producing a fibrinous peritonitis. On the liver there were areas up to the size of five-mark pieces thickly covered with fibrin, under which lay coiled worms. M.MCK.

375—Diseases of the Chest. Chicago.

a. LÓPEZ MAJANO, V., 1957.—" Treatment of pulmonary hydatidosis." **32** (1), 93–96. [French, German & Spanish summaries p. 96.]

(375a) At present all kinds of hydatid cysts, except those that are suppurating and call for lung resection, can be extirpated safely and effectively by surgical intervention. The method for the removal of the cysts after a limited thoracotomy now described is based on that of Bird & Lozano and yielded good results in 103 patients. R.T.L.

376—Dissertation Abstracts.

a. CONNOR, R. S., 1957.—" Studies on some digenetic trematodes parasitic in shore birds of Puerto Rico." **17** (2), 442.
b. GAROIAN, G., 1957.—" Application of the Thiry fistula technique to helminthological problems." **17** (2), 443.
c. HOLLOWAY, Jr., H. L., 1957.—" Notes on the helminths of mammals in the Mountain Lake region." **17** (3), 700.
d. DUNDEE, D. D. S., 1957.—" Aspects of the biology of *Pomatiopsis lapidaria* (Say) (Mollusca: Gastropoda: Prosobranchia)." **17** (6), 1418–1419.

(376a) From shore birds from Puerto Rico, Connor collected 10 heterophyid species, viz., *Galactosoma cochleariforme*, *G. cochlear*, *G. puffini* and two [here unnamed] species which

have been made types of *Galactosomoides* n.g. and *Retevillus* n.g., *Stictodora acanthotrema* and *S.* sp.?, *Opisthometra planicollis*, and *Phocitremoides* n.g. for *P. butionis* and *P. floridae*. Diplotrematidae n.fam. for *Diplotrema hematophaga* n.g., n.sp. is distinguished from other Opisthorchioidea by the reversed arrangement of the gonads. Nine species of Microphallidae occurred in the collection, viz., *Microphallus claviformis*, *Gynaecotyla adunca*, *Pseudospelotrema charadrii* n.sp., *P. nyctanassae* n.sp., *Maritrema patula* (which is transferred to *Maritreminoides*), *Maritrema glandulosa* (which is transferred to *Mecynophallus* n.g.), *Carneophallus bilobatus* n.sp., *Megalophallus pentadactylus* n.g., n.sp. and *Levinseniella caribbea* n.sp. *Microphalloides* and *Gynaecotyla*, valid and closely related genera, may represent a separate subfamily of Microphallidae. [None of their hosts are cited and as none of the new genera and species named are defined in this abstract of the thesis they are still nomina nuda. Although copies of the thesis are available in microfilm, the additions to the International Rules on Zoological Nomenclature adopted at Copenhagen (1953) include a new item, the inclusion of a new name in a book or paper distributed in microfilm does not constitute publication.] R.T.L.

(376b) When introduced into Thiry fistulae in dogs, infective larvae of *Ancylostoma caninum* derived all their nutriment from the mucosa and were able to develop, moult and grow to maturity without circulating in the blood stream. Adults of *Toxocara canis* required the addition of intestinal contents to survive. Plerocercoids of *Dibothriocephalus* underwent little development and did not remain in fistulae for more than three days. *Dipylidium caninum* died within a short time. *Taenia pisiformis* survived only seven days; with the daily addition of soluble starch and dextrose the period was nine days, but when normal intestinal contents were added daily the tapeworm survived the 14 days during which the test was continued. In all these experiments, however, strobilae were lost in two to three days. R.T.L.

(376c) Holloway mentions a number of mammalian species of Acanthocephala as new in the Mountain Lake region [but these have already been reported in 1956 in another abstract of this thesis in *Virginia Journal of Science* **7** (4), p. 285, which included *Centrorhynchus wardae* n.sp. (nomen nudum) from *Spilogale putorius*]. The cysticercus of *Hydatigera lyncis* is reported for the first time from the wood rat, *Neotoma magister*, and occurred in 37·5% in the Mountain Lake region. Some other data contained in the thesis are briefly summarized. R.T.L.

(376d) *Pomatiopsis lapidaria*, a potential intermediate host of *Schistosoma japonicum*, ranges from the southern part of Ontario to the eastern half of the U.S.A. It resembles *Oncomelania nosophora* in its habitat but seems better adapted to terrestrial conditions. At Ann Arbor *P. lapidaria* is dormant from late October to the middle of March and during August except in rainy periods. Mating occurs from mid-March to July. R.T.L.

377—Experimental Parasitology. New York.

a. FAIRBAIRN, D. & PASSEY, R. F., 1957.—" Occurrence and distribution of trehalose and glycogen in the eggs and tissues of *Ascaris lumbricoides*." **6** (6), 566–574.
b. GOODCHILD, C. G. & WELLS, O. C., 1957.—" Amino acids in larval and adult tapeworms (*Hymenolepis diminuta*) and in the tissues of their rat and beetle hosts." **6** (6), 575–585.
c. AGOSIN, M., 1957.—" Studies on the metabolism of *Echinococcus granulosus*. II. Some observations on the carbohydrate metabolism of hydatid cyst scolices." **6** (6), 586–593.
d. SCOTT, J. A., MACDONALD, E. M. & OLSON, L. J., 1957.—" Comparative experiments with a Florida strain of *Litomosoides carinii* in eastern and Texas cotton rats." **6** (6), 594–598.
e. HARGIS, Jr., W. J., 1957.—" The host specificity of monogenetic trematodes." **6** (6), 610–625.

(377a) Fairbairn & Passey have demonstrated that trehalose, usually regarded as a plant sugar, is wide-spread in *Ascaris* tissues. In adult *Ascaris* trehalose was absent from the intestine but occurred in the muscles, integument, ovaries and uteri, although glycogen was the predominant carbohydrate in those tissues, and in the testis and seminal vesicle where it predominated. In infective eggs it was confined to the perivitelline fluid where it was present in the very high concentration of 13·7% w/v. In unembryonated eggs trehalose and glycogen were present as 7·9 gm. and 7·8 gm. respectively (expressed as glucose) per 100 gm. of decoated egg. The techniques employed in the determinations are described. S.W.

(377b) Goodchild & Wells have analysed, by paper chromatography, the α-amino-acids present after acid hydrolysis of cysticercoids, scolices, strobilae and whole adults of *Hymenolepis diminuta* and of those tissues of the definitive and intermediate hosts which are in intimate contact with the parasites. Twenty different α-amino-acids were recovered chromatographically, although 16 was the maximum number found at one time in any one parasitic stage or sample of host tissue. There was a close parallel, both quantitatively and qualitatively, between the α-amino-acids of the parasites and the closely associated host tissue. Observations made on *H. diminuta* kept for four days in Thiry-Vella fistulae, without exogenous food, in rats showed that there was a general decrease in amounts, but not in kinds, of α-amino-acids. The biological significance of this is discussed. S.W.

(377c) The metabolism of scolices of *Echinococcus granulosus* obtained from hydatid cysts is characterized by both aerobic and anaerobic fermentation. Under aerobic conditions intracellular glycogen was consumed at the rate of 11·97 μ moles per gramme of fresh substance per three hours and was converted into a mixture of lactic, acetic, succinic and pyruvic acids and ethyl alcohol. Quantitatively lactic acid was the most important. Under anaerobic conditions glycogen was consumed at the rate of 13·5 μ moles per gm. per three hours; the end products were the same except that pyruvic acid was not produced and lactic and succinic acids were quantitatively the most important. These observations are compared with those reported for other helminths. S.W.

(377d) Scott, Macdonald & Olson have investigated differences in host specificity or acquired immune response of two geographically isolated subspecies of cotton-rat, *Sigmodon hispidus texianus* and *S. h. hispidus*, to a strain of *Litomosoides carinii* derived from natural infections in the latter. Primary infections developed equally well in both subspecies and produced, in both, a significant degree of immunity to further infection with the same strain of *L. carinii*. The results indicated that the immunity, as measured by retardation of growth and development, was produced more readily in the Texas cotton-rats and although it is possible to infer from this that the eastern strain of the filarial worm is better adapted to the eastern cotton-rat, the authors prefer to withhold judgement on this at present. S.W.

(377e) In this review of host specificity in the Monogenea, Hargis first defines "infraspecificity" as "the phenomenon of the occurrence of a single monogeneid species on members of a single fish taxon" and "supraspecificity" as "the phenomenon of the restriction of a natural group of monogeneid species to a natural grouping of fish species". The collection on which this work is mainly based comprised 75 monogeneid species (3,335 individual specimens) and 49 host species (415 individual hosts) and these are tabulated. 89% of the trematodes were strictly species-specific, only one species occurred on three species of host and eight species on two species of host. The paper continues with a discussion, generally restricted to the family level, of the more important patterns of supraspecificity which emerge from a consideration of the table of host specificity. Basically, rigid supraspecificity appears to be phylogenetic and non-rigid supraspecificity oecological. Far greater knowledge of the life-histories, oecology and physiology of the Monogenea is required before definite conclusions can be drawn of the causes and significance of their host specificity. S.W.

378—Gastroenterology. Baltimore.

a. SWARTZWELDER, C., MILLER, J. H. & SAPPENFIELD, R. W., 1957.—"The effective use of piperazine for the treatment of human helminthiases." **33** (1), 87–96.

(378a) Piperazine citrate syrup administered as a six-day course with single daily doses proved as efficacious in eliminating *Enterobius vermicularis* as 14-day treatments with divided daily doses. For Ascaris infections a single initial dose repeated one week later eliminated the worms in 97% of those treated. The efficacy of piperazine citrate, adipate and phosphate was practically the same, but for children a syrup preparation was preferable to a suspension

or to chewing wafers. The dosage used in all cases was 70 mg. per lb. body-weight (with 3 gm. as a maximum) and each c.c. of the fluid preparations contained the equivalent of 100 mg. of piperazine hexahydrate. R.T.L.

379—Geburtshilfe und Frauenheilkunde.

a. YOUSSEF, A. F., 1957.—" Entdeckung von Bilharziosis der Cervix uteri durch Routinekolposkopie." **17** (5), 445–449.

380—Hassadeh.

a. MINZ, G., 1957.—[The root-knot nematode, *Meloidogyne* spp., in Israel.] **37** (4), 313–316. [In Hebrew.]
b. MINZ, G., 1957.—[Cyst-forming nematodes in Israel.] **37** (9), 791–792. [In Hebrew.]
c. PAPO, S., 1957.—[Sensitivity of almond, peach and apricot stocks to root-knot disease.] **37** (9), 793–794. [In Hebrew.]

381—Hemera Zoa. Buitenzorg.

a. HOLZ, J., 1957.—" *Diphyllobothrium*—invasion eines Panthers." **64** (9/10), 334–340. [English & Indonesian summaries p. 339.]

(381a) A *Diphyllobothrium* from the panther, *Panthera pardus melas*, closely resembles *D. erinacei*, but as lime bodies are absent from the proglottides, the mature proglottis measures 3 mm. in width and the scolex is 500 μ by 250 μ, it is considered to be *D. parvum* Stephens, 1908. R.T.L.

382—Higiena i Sanitariya. Moscow.

a. MELASHENKO, V. F., 1957.—[The role of the Poltva River in the epidemiology of geohelminthiasis in Lvov.] **22** (3), 78–81. [In Russian.]

(382a) To determine the part played by the River Poltva in the epidemiology of geohelminths in Lvov, Melashenko examined, in the course of ten months, 308 litres of river water, 150 samples from the river bed and 75 soil samples from the shore taken at various points along the river between its entry into Lvov and up to 5 km. after it had passed through the town. Tables set out the results (i) for the river water, giving the number of eggs found at each point of examination, the number of eggs per litre and, separately, the number of ascarid and trichurid eggs, (ii) for samples of sediment and (iii) for samples of soil, giving the total number of eggs at each point examined and, separately, the number of ascarid, trichurid and taeniid eggs. The highest contamination was observed in the spring and summer. G.I.P.

383—Indian Journal of Medical Sciences.

a. SINGH, A. & JOLLY, S. S., 1957.—" Cysticercosis. Case report." **11** (2), 98–101.

(383a) Singh & Jolly report from India an unusual case of *Cysticercus cellulosae* infection, in man, in which there was symmetrical muscular hypertrophy and progressive blindness. R.T.L.

384—Japanese Journal of Medical Science and Biology.

a. SAWADA, I., 1957.—" *Raillietina (Raillietina) peradenica* n.sp. from a Ceylon domestic fowl, *Gallus gallus domesticus*." **10** (3/4), 243–246.
b. YANAGISAWA, T., 1957.—" On the spermatogenesis in *Ascaris suilla*, especially on its morphological observation." **10** (3/4), 247–255.

(384a) *Raillietina* (*R.*) *peradenica* n.sp. from *Gallus g. domesticus* in Ceylon, although very similar to *R.* (*R.*) *volzi* Fuhrmann, 1905, differs in the position of the genital pore which is slightly anterior to the middle of the margin of the segment and in having 17 to 21 testes, whereas in *R.* (*R.*) *volzi* they number 30. R.T.L.

385—Japanese Journal of Veterinary Research.

a. OHBAYASHI, M. & SATOH, H., 1957.—" Discovery of a case of trichinosis in Japan." **5** (2), 39–42.
b. YAMASHITA, J., OHBAYASHI, M. & KONNO, S., 1957.—" Studies on echincoccosis. V. Experimental infection of the sheep." **5** (2), 43–50.

(385a) Although dogs with *Trichinella spiralis* infection have been found in Manchuria, this is the first record of trichinelliasis in a dog in Japan, where infections in man are still unknown. R.T.L.

(385b) In sheep experimentally infected with eggs of *Echinococcus granulosus*, reared in dogs which had been fed with hydatid sand of Australian origin, the hydatid cyst resulting three months later was only about 1 mm. in diameter, and the cyst was polymorphic in shape from herniation. The hydatid was surrounded by a thick layer of granulation tissue with an inner necrotic layer frequently showing calcified foci. This impedes its smooth and rapid enlargement. The formation of the so-called exogenous daughter cyst is merely the result of herniation. The cysts were more plentiful in the lungs than in the liver and in the right lobe in preference to the left lobe. R.T.L.

386—Journal of Agricultural Science.

a. SPEDDING, C. R. W. & BROWN, T. H., 1957.—" A study of subclinical worm infestation in sheep. Part II. The 'tolerance' level of infestation." **49** (2), 223–228.
b. SPEDDING, C. R. W. & BROWN, T. H., 1957.—" A study of subclinical worm infestation in sheep. Part III. The effect on wool production." **49** (2), 229–233.

(386a) Spedding & Brown have studied the faecal egg counts, live weight gains and skeletal measurements in five groups of four lambs infected, when six weeks old, with numbers of infective nematode larvae varying between 1,189 and 5,947 and compare these observations with those made on 20 similar but uninfected lambs. All were kept on pasture under the same conditions. None of the infected groups gained as much weight as did the controls which, over nine months, gained 67·7% more weight than the whole group of infected lambs. Weight gains in the infected group did not appear to be related either to the initial level of infection or to the faecal egg counts. The authors conclude that counts as low as 114 e.p.g. may be associated with marked depression of productivity. The paper is illustrated by graphs and tables. S.W.

(386b) Spedding & Brown describe five experiments on the effect of subclinical nematode infections on the wool production of sheep. They found that the uninfected controls produced 12·0% to 38·8% higher total fleece weights and 17·2% to 43·2% more clean, dry wool per unit area than did the infected sheep. This effect was more marked in lambs infected when six weeks old than in those which remained worm-free until they were seven months old. The greatest effects were associated with a low level of nutrition. S.W.

387—Journal of the American Medical Association.

a. BUMBALO, T. S., PLUMMER, L. J. & WARNER, J. R., 1957.—" Treatment of enterobiasis with one oral dose of promethazine hydrochloride." **164** (15), 1651–1653.

(387a) No anthelmintic effect against Enterobius was observed when 107 inmates of a children's home were given one dose of promethazine hydrochloride, or after 24 children had received a single dose of another phenothiazine derivative, pyrathiazine hydrochloride. M.McK.

388—Journal of the American Veterinary Medical Association.

a. DRUDGE, J. H., LELAND, Jr., S. E., WYANT, Z. N. & HUTZLER, L. B., 1957.—" Field studies with piperazine-carbon disulfide complex against parasites of the horse." **131** (5), 231–233.
b. JORDAN, H. E. & ASHBY, W. T., 1957.—" Liver fluke (*Metorchis conjunctus*) in a dog from South Carolina." **131** (5), 239–240.

c. CAMPBELL, D. J. & WETHERILL, G. D., 1957.—" Parasitic bronchitis in adult cattle in Ontario—a case report." **131** (6), 273–275.
d. BALCH, R. K., FONSECA, J., RICE, W. G. & LEACH, B. F., 1957.—" Canine filariasis in the Far East." **131** (6), 298–301.
e. SHELTON, G. C., MOLES, A. & DYER, A. J., 1957.—" Parasitism in sheep on irrigated pastures." **131** (7), 315–317.
f. HENNIGAR, G. R. & FERGUSON, R. W., 1957.—" Pulmonary vascular sclerosis as a result of *Dirofilaria immitis* infection in dogs." **131** (7), 336–340.
g. DOUGLAS, J. R., BAKER, N. F. & LONGHURST, W. M., 1957.—" The effect of divided dosage on the anthelmintic efficiency of phenothiazine in lambs." **131** (8), 369–371.
h. KUME, S. & OHISHI, I., 1957.—" Observations on the chemotherapy of canine heartworm infection with arsenicals." **131** (10), 476–480.
i. WALLEY, J. K., 1957.—" A new drug, cyanacethydrazide, for the oral and subcutaneous treatment of lungworm disease in animals." **131** (12), 539–544.
j. ESHENOUR, R. W., BURCH, G. R. & EHRENFORD, F. A., 1957.—" Intravenous use of phthalofyne (Whipcide) in the treatment of canine whipworms." **131** (12), 568–570.

(388a) In field studies in which 197 sucklings, weanlings and yearlings and mares were treated with Parvex at the dosage rate of 37·5 mg. per lb. body-weight, both immature and mature ascarids were effectively removed; but this dosage level did not have any apparent action against *Strongylus vulgaris* or *Strongyloides westeri*. Low level phenothiazine medication was effective in depressing egg production and inhibiting larval development of strongyles, especially *S. vulgaris*. R.T.L.

(388b) Autopsy on a four-year-old dog in South Carolina revealed an enlarged and turgid liver and the gall-bladder was distended by over 100 specimens of *Metorchis conjunctus*. R.T.L.

(388c) An outbreak of bovine asthma due to *Dictyocaulus viviparus* recently occurred in a herd near Guelph, Ontario, but only the lactating cows were severely affected. Symptoms were first noticed twelve days after the animals had been turned out on to lush pasture on which a high infestation of *D. viviparus* larvae was afterwards detected and was traced to the effluent discharged from the barn-yard. R.T.L.

(388d) There is a high incidence of canine filariasis in dogs acquired by the United States Air Force in the Far East as sentry dogs. The arsenical preparation Filarsen proved 90% effective and relatively non-toxic when administered to those with mild or moderate natural infections of adult *Dirofilaria immitis*. In massive infections, however, pulmonary obstruction may result in heart failure. R.T.L.

(388e) A phenothiazine-salt mixture, although fed continuously, and bi-weekly doses of phenothiazine or copper and nicotine sulphates failed to control gastro-intestinal parasitism in experimentally infected sheep on irrigated experimental plots. Most of the animals showed severe symptoms and 20% of the lambs and 11% of the ewes died. [Total number used not stated.] R.T.L.

(388g) An experiment to determine specifically the anthelmintic effect of the administration to lambs of a 25 gm. dose of phenothiazine given as a single dose or in divided doses spread over one, three, five and seven days showed that its efficacy dropped from 65% when given at one time to 0% when given in equal doses daily for seven days. R.T.L.

(388h) Filarsen (dichlorophenarsine hydrochloride) destroyed over 94% of adult *Dirofilaria immitis* when 1 mg. per kg. body-weight was injected intravenously into infected dogs daily for three days and 97% were destroyed after the injection of the same dosage of thiacetarsamide (caparsolate sodium). R.T.L.

(388i) [This is a partially rewritten and abbreviated version of Walley's article entitled "A New Drug for the Treatment of Lungworms in Domesticated Animals" which appeared in *Vet. Rec.*, 1957, **69**, 815–824, 850–853. For abstract see Helm. Abs., **26**, No. 302b.]

(388j) The compound 3-methyl-1-pentyn-3-yl sodium phthalate (=phthalofyne or Whipcide), which has recently been shown to be an effective anthelmintic against *Trichuris vulpis* in oral doses of 200 mg. to 250 mg. per kg. body-weight, was shown to be equally effective when 250 mg. to 300 mg. per kg. body-weight was given intravenously as a 50% solution. The side reactions were transient depression, nausea and ataxia. R.T.L.

389—Journal de Chirurgie. Paris.

a. TON-THAT-TUNG, HOANG-SU, NGUYEN-VAN-VAN & HOANG-KIM-TINN, 1957.—" L'ascaridiose des voies biliaires." **73** (5), 506–523.

b. MONOD-BROCA, P. & HARLÉ, M., 1957.—" Les kystes hydatiques du diaphragme (ou de la région phrénique)." **74** (1), 44–55.

390—Journal of the Christian Medical Association of India.

a. DEODHAR, P. C. & COOK, H. H., 1957.—" Case report: an unusual site for echinococcal cyst." **32** (3), 144.

391—Journal of Clinical Investigation.

a. ROCHE, M., PÉREZ-GIMÉNEZ, M. E., LAYRISSE, M. & PRISCO, E. DI, 1957.—" Study of urinary and fecal excretion of radioactive chromium Cr^{51} in man. Its use in the measurement of intestinal blood loss associated with hookworm infection." **36** (7), 1183–1192.

(391a) Having established that only negligible amounts of circulating radio-active chromium (as Cr^{51} bound to erythrocytes) are excreted in the faeces of normal persons and that almost all the radio-activity of the Cr^{51}-tagged erythrocytes intubated into the stomach or duodenum is recovered in the faeces, Roche *et al.* used Cr^{51}-labelled erythrocytes in an estimation of the daily blood loss per patient in a number of cases of hookworm disease. Of these, 12 were infected with *Necator americanus* only and five had mixed infections of *N. americanus* and *Ancylostoma duodenale*, although the latter had not previously been thought to be present in Venezuela. Daily blood loss in the stools varied from 2·0 ml. (normal) to 251·5 ml. (in a patient with a mixed infection from whom 3,534 hookworms were subsequently recovered) and appeared to be roughly proportional to the severity of infection. There was a rough correlation between the number of ova in the stools and the amount of blood lost. The blood loss per *N. americanus* averaged $3{\cdot}11 \times 10^{-2} \pm 1{\cdot}73 \times 10^{-2}$ and that calculated for *A. duodenale* was about 0·2 ml. per worm. The daily iron loss was between 1·2 and 29·1 mg. S.W.

392—Journal of Comparative Pathology and Therapeutics.

a. PARKER, W. H., 1957.—" Diethylcarbamazine in the treatment of lungworm infestation of calves due to *Dictyocaulus viviparus*." **67** (3), 251–262.

(392a) Following a verbal report that a cow with husk had recovered spectacularly after dosing with diethylcarbamazine at the rate of 1 mg. per lb. body-weight, it was found that, in a natural outbreak of husk, this dosage prevented deaths from parasitic bronchitis in 37 calves 9 to 12 months old, whereas of 37 untreated calves, 11 died or had to be destroyed. Death was prevented in experimentally infected calves under five months old by 25 mg. per lb. body-weight given daily for five days 14 to 18 days after infection, and there were reasonable gains in weight, but this treatment proved less effective when given in the later stages. The drug depressed the larval counts in the faeces of calves affected with parasitic bronchitis due to *Dictyocaulus viviparus*. R.T.L.

393—Journal of the Egyptian Medical Association.

a. EL-GINDY, M. S., 1957.—" Laboratory studies on the effect of copper sulphate on *Biomphalaria boissyi*, the snail vector of mansoni schistosomiasis in Egypt." **40** (1), 45–53.
b. ISHAK, K. G., 1957.—" Adenocarcinoma of the head of the pancreas associated with *S. mansoni* infestation. Report of a case." **40** (1), 59–63.
c. EL-GINDY, M. S., 1957.—" Field studies on the action of copper sulphate as a molluscocide for control of the snail vectors of schistosomiasis in Egypt." **40** (2), 111–121.
d. EL-GINDY, M. S., 1957.—" Distribution and ecology of the snail vectors of schistosomiasis in Egypt." **40** (3/4), 192–204.
e. KIKUTH, W., 1957.—" Research on medical problems of national importance (schistosomiasis, rheumatism and poliomyelitis)." **40** (3/4), 205–215.
f. IBRAHIM, H., 1957.—" Combined ligation of hepatic and splenic arteries in Egyptian splenomegaly." **40** (3/4), 253–269.
g. WATSON, J. M., 1957.—"The effect of water movement on populations of *Bulinus truncatus*." **40** (5), 308–324.
h. KHAIRY, M., 1957.—" Hepatic artery ligature for liver cirrhosis in Egypt." **40** (6), 396–409.
i. NAGATY, H. F. & RIFAAT, M. A., 1957.—" A parasitological survey of the Kharga and Dakhla oases in 1952 and of the Dakhla oases in 1955." **40** (6), 444–447.

(393a) Using *Biomphalaria boissyi* in aquaria containing clear Nile water, El-Gindy has confirmed that the molluscicidal effect of copper sulphate is greater at higher concentrations and temperatures and increases with the duration of contact. Snails infected with schistosomes were more susceptible than uninfected snails and there was some indication that snails which survived one treatment were more resistant to a second treatment with the same concentration of copper sulphate. Flood water caused a decrease in the efficiency. S.W.

(393c) El-Gindy has tested three methods of applying copper sulphate for the control of *Bulinus truncatus* and *Biomphalaria boissyi* in the field. The "closed method" in which it was applied to stagnant portions of closed drains at 15 p.p.m. was very effective. In the "shore method" copper sulphate was dissolved at the rate of 4 kg. per 50 metres close to the banks of streams; snails downstream from the point of application were eliminated after exposure for 24 hours. In the "continuous feeding method" a 10 p.p.m. solution was maintained at the intake of a canal for eight hours: almost all the snails were killed. The greatest drop in concentration occurred in the first kilometre; at the end of 28 hours the chemical had reached a point 12 km. from the intake. S.W.

(393d) *Bulinus truncatus* which is widely distributed in the irrigated areas of Egypt reaches its greatest intensity in the southern part of Beheira. *Biomphalaria boissyi* is practically absent south of Cairo although environmental conditions are seemingly not unfavourable. The degree of infestation of the waterways is highest in the triangle including Alexandria and Rosetta where it reaches 80%. In the north and middle of the delta more than half of the waterways are infested while in the southern part there is a free zone south of Kom Hammada town in Beheira Province and another east of the Damietta branch of the Nile. There are few infested waterways in the Provinces Menufiya, Qualuibiya and Giza. During a recent survey of the ponds in the Zoological Gardens at Giza eight out of 23 were found infested with *B. boissyi* and five of these contained infected snails. In Beni-Suef Province in Upper Egypt several branch drains leading to the main drain were found infested in 1954 but no autochthonous cases of *Schistosoma mansoni* have been reported yet. *Pyrgophysa forskali* has been collected from a ditch in the southern part of Beheira Province, from a marsh in Fouadiya Province, from tertiary canals in Giza Province, from several small streams in Beni-Suef Province and close to Luxor in Quena Province. El-Gindy also reviews the effects of natural enemies, various types of aquatic vegetation and of pollution, current, temperature and salinity on the prevalence of the schistosome vectors. R.T.L.

(393e) This lecture includes a review of recent advances in the chemotherapy of schistosomiasis and in the control of its vectors by molluscicidal substances. R.T.L.

(393g) Watson discusses the effects of wave action, current and floods on fresh-water snails, and especially on populations of *Bulinus truncatus* in the Middle East. Better aeration

and reduction in putrefactive products due to wave action is more than offset by the detrimental effect of mechanical disturbance. Where the current is rapid *B. truncatus* is almost invariably absent, a speed of about 15 metres per minute being the maximum it can withstand and establish breeding colonies. A faster intermittent current is better withstood than one that is continuous. *B. truncatus* can establish itself in turbid and silt laden, stagnant or gently flowing water, but not so effectively as when the water is clear. Fast flowing water is an important factor in snail dispersal. Floods carry away and destroy large numbers by the abrasive action of silt, the accompanying fall in temperature and the drastic alteration in the nature of the habitat by the removal of the soft substratum, water plants and algae. R.T.L.

(393i) During a brief visit in February, 1952 to the Kharga and Dakhla Oases, Nagaty and Rifaat examined the blood, urine and faeces of 92 individuals. The specimens of blood and urine gave no indication of helminth infection (apart from the presence of Enterobius ova in the urine of a young girl) but the faeces showed eggs of *Hymenolepis nana* in seven and those of *Taenia* sp. in two instances. No Ascaris or hookworm ova were detected. When the Dakhla Oasis was revisited in 1955 the urine of three adults out of 113 examined contained terminal-spined eggs, viz., one from Moot, one from Balat and one from Guedida. *Hymenolepis nana* was found mainly among the children in the villages Kalamoon, Guedida and Rashda. The repeated treatment of the wells and streams had practically eradicated *Bulinus* but specimens of *Limnaea truncatula* were found during the first visit. R.T.L.

394—Journal of the Egyptian Public Health Association.

a. HALAWANI, A., 1957.—" Mass treatment and control service of schistosomiasis and endemic diseases in Egypt." **32** (3), 123–135.
b. ABDOU, A. H., 1957.—" Studies on the efficacy of the tin compound di-n-butyl-tin-dilaurate as a taeniacidal agent." **32** (3), 151–165.

(394a) Halawani sketches the various measures now being carried out by various official organizations in Egypt for the treatment and control of schistosomiasis. R.T.L.

(394b) In preliminary tests di-n-butyl tin dilaurate proved an efficient anthelmintic against *Hymenolepis fraterna* in experimentally infected mice. The minimum effective dose was 0·1 ml. of a solution in Arachis oil (1:128) and the maximum tolerated dose for mice weighing 20–25 gm. was 0·1 ml. in Arachis oil (1:32). R.T.L.

395—Journal of Helminthology.

a. ANDERSON, R. C., 1957.—" The life cycles of dipetalonematid nematodes (Filarioidea, Dipetalonematidae): the problem of their evolution." **31** (4), 203–224.
b. MULVEY, R. H., 1957.—" Susceptibilities of cultivated and weed plants to the sugar-beet nematode, *Heterodera schachtii* Schmidt, 1871, in southwestern Ontario." **31** (4), 225–228.
c. WRIGHT, C. A., 1957.—" Two kidney-flukes from Sudanese birds, with a description of a new species." **31** (4), 229–238.
d. BROEK, E. VAN DEN, 1957.—" Some observations on *Cercaria splendens* Szidat, 1932 from a new intermediate host, *Planorbis vortex*, in the Netherlands." **31** (4), 239–246.
e. McCLELLAND, W. F. J., 1957.—" Two new genera of amphistomes from Sudanese freshwater fishes." **31** (4), 247–256.
f. SANDARS, D. F., 1957.—" A new strigeid trematode from an Australian marsupial." **31** (4), 257–264.
g. SANDARS, D. F., 1957.—" On *Brachylaemus* (Trematoda) from marsupials." **31** (4), 265–272.

(395a) Anderson suggests that the more specialized spiruroids were derived from intestinal forms similar to *Rhabdochona* and that those which, like *Thelazia*, left the gut for the tissues gave rise to dipetalonematids. Their eggs were released through lesions of the skin which attracted haematophagous arthropods and these became intermediate hosts. In other species the embryos spread through the tissues and, ultimately gaining access to the blood stream, were taken up by those vectors which could puncture the skin. Certain species in which the eggs pass through the lungs and gut to appear in the faeces probably represent a separate line of evolution. R.T.L.

(395b) Of 90 plant species and varieties grown in nematode-infested soil, 35 were found to be hosts of *Heterodera schachtii*. The infestation of each plant was classified as very heavy, heavy, medium or light, according to the number of white females found on the roots. Plants very heavily attacked were found only in the genera *Beta* and *Brassica*. Listed as more lightly attacked were other Cruciferae and Chenopodiaceae, and various Amaranthaceae, Caryophyllaceae, Polygonaceae and Portulacaceae. No hosts were found in the Aizoaceae, Asclepiadaceae, Compositae, Cucurbitaceae, Gramineae, Labiatae, Leguminosae, Liliaceae, Onagraceae, Papaveraceae, Solanaceae or Umbelliferae. R.D.W.

(395c) Two species of kidney-flukes are described and figured from birds in the Southern Province of the Sudan, viz., *Ignavia venusta* de Freitas, 1948 from the fish-eagle (*Cuncuma vocifer*) and the Goliath heron (*Ardea goliath*) and *Renicola goliath* n.sp. from *A. goliath*. The latter differs from all known species in its large size (4·75 mm. × 3·5 mm.) while its vitelline follicles lie ventral to the caeca and occur in groups throughout the middle of the body. *Allechinostomum renale* Yeh, 1954 is not regarded as belonging to this genus and is transferred to *Ignavia*. R.T.L.

(395d) *Cercaria splendens*, already reported from *Planorbis planorbis*, *Limnaea auricularia* and *Agroloxus lacustris*, has been found in *Planorbis vortex*. It was used to infect sticklebacks in which, however, it failed to attain maturity, the genitalia being poorly developed after four-and-a-half weeks. R.T.L.

(395e) *Sandonia sudanensis* n.g., n.sp., from the silurioid fishes *Synodontis schall* and *Distochodus niloticus* at Khartoum, differs from *Allassostoma* in the posterior position of the ovary, the large size of the pharyngeal sacs, the extension of the follicles of the vitellaria from the ovary almost to the posterior margin of the posterior testis, and the course of the longitudinal excretory canals. The circular area of thickening around the aperture of its acetabulum is a unique feature in the Schizamphistominae. *Brevicaecum niloticum* n.g., n.sp. from the Nile fish *Citharinus citharus* at Khartoum is strikingly similar to *Kalitrema* but does not possess the ring-like projection near the anterior end, the oesophageal bulb, the genital sucker and the two semi-circular lobes, between which the acetabulum lies, which are characteristic of *Kalitrema*. R.T.L.

(395f) *Fibricola sarcophila* n.sp. from the Tasmanian Devil *Sarcopholis harrisii* (syn. *S. ursinus*) of Tasmania is differentiated mainly by the extension of the vitelline follicles to the posterior end of the body. It differs from *F. minor* in the more marked constriction between the anterior and posterior parts of the body, the separate position of the acetabulum in relation to the tribocytic organ and in the arrangement of the vitelline follicles which are numerous anteriorly and decrease markedly posteriorly. Previously recorded strigeids from marsupials are cited and the relationship of those in Australian and American hosts discussed. An addendum states that trematodes "provisionally identified as *Pharyngostomoides* n.sp." have been recovered from the intestine of *Dasyurus maculatus*. R.T.L.

(395g) *Brachylaemus dasyuri* (Johnston, 1912), of which *B. simile* is a synonym, is redescribed and recorded from *Thylacis obesulus* in Queensland. The species of *Brachylaemus* from American and Australian marsupials are reviewed. It seems probable to Sandars that all the species in American opossums belong to *B. opisthotrias*. R.T.L.

396—Journal of Infectious Diseases.

a. SADUN, E. H., NORMAN, L., ALLAIN, D. S. & KING, N. M., 1957.—" Observations on the susceptibilities of cotton rats to *Echinococcus multilocularis* (Leuckart, 1863)." **100** (3), 273–277.

b. KAGAN, I. G., 1957.—" Serum-agar double diffusion studies with Ascaris antigens." **101** (1), 11–19.

(396a) *Sigmodon hispidus* proved highly susceptible to experimental infection with *Echinococcus multilocularis*. The infection spread from the liver to other viscera within a few weeks. Preliminary studies suggest that the bentonite flocculation test may be useful in the laboratory diagnosis of this infection. R.T.L.

(396b) Kagan prepared antisera against pig Ascaris by injecting rabbits with whole worm antigen. The pig Ascaris antigens studied by the serum-agar double diffusion technique were: (i) unembryonated egg, (ii) embryonated egg, (iii) enteric fluid, (iv) muscle, (v) cuticle, (vi) whole worm and (vii) polysaccharide fraction from whole worm. The results, which are illustrated by four figures, indicated that the minimum numbers of antigenic components present extended from two (in embryonated eggs) to 14 (in whole worm extract). Many of the antigens appeared to be common to different tissue fractions. Human Ascaris antigen (except for one polysaccharide component) absorbed all antibodies in pig Ascaris antiserum: *Toxocara canis* and *T. cati* were not as active in absorbing antibodies from pig Ascaris antiserum although a large number of cross-reacting antigens were present. S.W.

397—Journal of the Japanese Veterinary Medical Association.

a. ITAGAKI, S. ET AL., 1957.—[Effect of removal of microfilariae from bovine blood stream on the prevention of lumbar paralysis in sheep and goats. II.] **10** (2), 79–81. [In Japanese.]
b. WATANABE, S. ET AL., 1957.—[Experiments on the ascaricidal effect of piperazine compounds. I. Removal of swine ascarids.] **10** (3), 134–137. [In Japanese.]
c. OSHIO, Y. ET AL., 1957.—[Experiments on the anthelmintic effects of piperazine derivatives upon swine and avian ascarids. II. Effect of piperazine phosphate.] **10** (4), 165–166. [In Japanese.]
d. ONO, Y. ET AL., 1957.—[Studies on *Limnaea pervia* as an intermediary host of *Fasciola hepatica* in Hyogo Prefecture.] **10** (5), 227–230. [In Japanese.]

398—Journal of Parasitology.

†a. WHITLOCK, J. H. & MADSEN, H., 1957.—" Notes on further studies of the inheritance of resistance to trichostrongylidosis in sheep." **43** (5, Sect. 2), 11.
†b. MADSEN, H. & WHITLOCK, J. H., 1957.—" Preliminary studies on trichostrongylids in sheep by means of a gastric pouch." **43** (5, Sect. 2), 11.
†c. CIORDIA, H., 1957.—" Studies on the effect of X-rays on the infective stage of the nematode *Trichostrongylus axei*." **43** (5, Sect. 2), 11.
†d. ROHRBACHER, Jr., G. H., 1957.—" The effect of green feed upon the development of *Trichostrongylus axei* in the laboratory rabbit." **43** (5, Sect. 2), 11–12.

(398a) Further experiments have not given any evidence that the factor for inherited resistance to trichostrongylidosis in sheep is other than a simple dominant genetic factor. R.T.L.

(398b) Adult *Haemonchus* females survived longer in an incubator if previously exposed for an hour in the gastric pouch of a susceptible sheep and the survival rate of ensheathed or exsheathed larvae in a gastric pouch was higher in susceptible sheep. Variation in pouch resistance was confirmed by variation in the resistance of the sheep to repeated normal infections. R.T.L.

(398c) In groups of rabbits each artificially fed with infective larvae of *Trichostrongylus axei* previously exposed to 1,000, 2,000, 5,000 and 10,000 roentgen units the largest number of worms was recovered from those which received the larvae irradiated by 5,000r. and an increased number of eggs was passed per adult worm although the larvae which subsequently developed in faecal cultures were not affected. No larvae irradiated by 20,000r. reached maturity, while 10,000r. had no apparent effect on the larvae. R.T.L.

(398d) When rabbits artificially infected with a bovine strain of *Trichostrongylus axei* were fed with fresh green food the development of the worms was inhibited. Thirty days after infection 68% of the worms recovered were immature whereas only 29% were immature when the rabbits were fed on standard commercial pellets. There was also a significant difference in the percentage of immature worms found in pregnant and non-pregnant rabbits on green feed. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

398—Journal of Parasitology (cont.)

†e. TROMBA, F. G. & DOUVRES, F. W., 1957.—" The experimental infection of swine with nematodes of ruminants." **43** (5, Sect. 2), 12.

†f. SHUMARD, R. F., 1957.—"The effect of the nematode, *Trichostrongylus axei* (Cobbold, 1879) on the utilization and excretion of certain elements." **43** (5, Sect. 2), 12.

†g. TURNER, J. H., 1957.—" Further studies on ovine strongyloidiasis: an attempt to induce passive immunity." **43** (5, Sect. 2), 12–13.

†h. CHANG, P. C. H. & GRAHAM, G. L., 1957.—" Parasitism, parthenogenesis and polyploidy: the life cycle of *Strongyloides papillosus*." **43** (5, Sect. 2), 13.

†i. SCHAD, G. A., 1957.—" Preliminary observations on the life history of the sheep pinworm, *Skrjabinema ovis*." **43** (5, Sect. 2), 13.

(398e) Six days after a five-week-old pig was given 1,200,000 trichostrongylid and *Dictyocaulus viviparus* larvae of bovine origin it died from pericarditis and endocarditis aggravated by the large number of developing larvae. The mucous membrane of the stomach and small intestine was eroded and friable, with haemorrhagic areas. When three litter mates were similarly infected but with trichostrongylid larvae in greater numbers, sexually mature *Trichostrongylus axei* and *T. colubriformis* and third and fourth-stage larvae of *Ostertagia* were recovered. *Dictyocaulus viviparus* and *Cooperia* sp. had not developed. R.T.L.

(398f) Experimental results indicate that lambs infected with *Trichostrongylus axei* maintained a relatively high sodium level but the excretion of potassium, calcium, phosphorus and protein nitrogen approached, and in some cases exceeded, the consumption levels. R.T.L.

(398g) Immediately following the injection of immune serum, lambs were infected percutaneously with 150,000 infective larvae of *Strongyloides papillosus*. During the succeeding eight weeks no significant differences were observed between these and the control lamb and at autopsy the immunized lambs contained a greater number of worms. The increases in gamma globulin two weeks after infection, a marked increase in beta globulin one week later and a rapid decline in the A/G ratio during the first three weeks indicate that *S. papillosus* in lambs may produce more than one antibody. Oral and anal precipitates formed, in about four hours, on infective larvae incubated at 37°C. in immune serum. R.T.L.

(398h) In the eggs of the parasitic phase of *Strongyloides papillosus* there are constant chromosomal differences. Normally the number of chromosomes is six. In other eggs there may be four and a small compact mass of Feulgen-positive material, designated "extrusion body". Two chromosomes are frequently shorter than the other pair. Eggs occasionally contained two extrusion bodies but the chromosome number in these has not been determined. In the heterogenetic generation the large egg nucleus in virgin females contains two tetrad chromosomes differing in size, which rest against the nuclear membrane opposite each other. In "spermatized" females eggs occur with the tetrads side by side during polocyte formation following sperm entry. There is a single equational maturation division, but no meiosis. The resultant diploid female pronuclei have four chromosomes. Fusion with haploid male pronuclei produces viable triploid zygotes which develop into infective filariform larvae capable of further development into parthenogenetic parasitic females. In the triploid parthenogenetic parasitic generation the determinant factor, which may be genetic, for homogenetic or heterogenetic development lies between normal mitoses during oocyte growth and one or more abnormal cell divisions which may involve non-disjunction but simulate polocyte formation. R.T.L.

(398i) The eggs of *Skrjabinema ovis* are not usually found in the sheep's faeces but are normally deposited on the perianal skin where the females probably migrate during the night. The infective larva enclosed in the egg-shell is probably the third stage and apparently hatches in the intestine. The fourth stage was recovered on the 12th and 17th day after the infection. Almost all the larvae became adult by the 25th day. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

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†j. WILSON, G. I. & KATES, K. C., 1957.—" Preliminary experiments on transmission of gastrointestinal nematodes of ovine and caprine origin to lambs and kids on pasture." **43** (5, Sect. 2), 13–14.

†k. WEBER, T. B., 1957.—" Observations on the relation of serum protein changes, antibody formation, and eosinophilia in cattle infected with the lungworm, *Dictyocaulus viviparus*." **43** (5, Sect. 2), 14.

†l. JASKOSKI, B. J., 1957.—" Problems of nematode control in the captive giraffe and okapi." **43** (5, Sect. 2), 14.

†m. HALEY, A. J., 1957.—" Host specificity of *Nippostrongylus*." **43** (5, Sect. 2), 14–15.

†n. HEWITT, R. & GUMBLE, A., 1957.—" Effects of standard anthelmintics on experimental infections with *Nematospiroides dubius* Baylis in laboratory mice." **43** (5, Sect. 2), 18.

†o. McCOWEN, M. C., GOSSETT, F. O., CALLENDER, M. E. & BRANDT, M. C., 1957.—" Anthelmintic effect of 'Hygromix' (*S. hygroscopicus* fermentation products, Lilly) on helminths in swine." **43** (5, Sect. 2), 18–19.

†p. MAYHEW, R. L., MILLER, G. & TORBERT, B., 1957.—" Results of feeding small amounts of phenothiazine to calves with pure infections of *Cooperia punctata*." **43** (5, Sect. 2), 19.

(398j) Although sheep and goats are commonly parasitized by the same species of gastrointestinal nematodes, lambs tended to acquire proportionately more worms of caprine than of ovine origin and kids to acquire more of ovine than of caprine origin. R.T.L.

(398k) Electrophorograms showed that in cattle exposed and re-exposed to infection with *Dictyocaulus viviparus*, gamma globulin increased from about the first week to a maximum four weeks later, persisting for various periods depending on the number of exposures then gradually returning to normal. The complement-fixing antibody response reached peak in about two weeks, persisted for about two months and was maintained with lower titres for several months afterwards. Eosinophil percentage increased from the first week after exposure to a peak in the following week then declined during the next two weeks but rose again to a lower peak which persisted for three to nine weeks. When mature worms were immersed in serum from infected calves precipitates first formed at the openings of the worms in serum collected about two weeks after infection reaching a maximum about the fourth week after exposure and remained for several months at this level. R.T.L.

(398m) When hamsters and rats were infected with *Nippostrongylus muris* larvae, several hundred third-stage larvae were recovered from the lungs of the hamsters up to the 18th day whereas none were then found in the rats. The male hamsters had nearly twenty-five times as many adult worms as the females. Nine to ten days after infection the rats harboured about 14 times as many adult worms as did the hamsters. R.T.L.

(398n) Although *Nematospiroides dubius*, a natural infection of wild mice, is also infective to laboratory mice little had been published on its susceptibility to anthelmintics yet single oral doses of seven out of nine standard anthelmintics were found to be active against the adult worms in white mice. R.T.L.

(398o) When crude dried broth of *Streptomyces hygroscopicus* containing Hygromycin B was incorporated in their food for three weeks, the numbers of *Ascaris*, *Oesophagostomum* and *Trichuris* eggs passed by pigs were greatly reduced and there were no toxic effects. R.T.L.

(398p) The number of infective larvae of *Cooperia punctata* which developed in the faeces of infected calves was markedly reduced while 1·5 gm. to 12 gm. of phenothiazine was added daily to their food. The contamination of the premises and the risks of heavy infections of susceptible animals were greatly diminished. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

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†q. HERLICH, H. & JOHNSON, J. M., 1957.—" Critical tests on the efficacy of Dow ET-57 as an anthelmintic in cattle." **43** (5, Sect. 2), 19.

†r. LARSON, I. W. & HANSEN, M. F., 1957.—" Chemoprophylactic action of piperazine dihydrochloride against a typhlitis in chicks." **43** (5, Sect. 2), 19.

†s. STEWART, T. B. & TROMBA, F. G., 1957.—" The control of the swine kidneyworm (*Stephanurus dentatus*) through management." **43** (5, Sect. 2), 19–20.

†t. BRADLEY, R. E. & LEVINE, N. D., 1957.—" The relation of a two-day pasture rotation system to the acquisition of gastrointestinal nematodes by sheep." **43** (5, Sect. 2), 20.

†u. WILSON, G. I., 1957.—" Comparison of the DCF and McMaster egg-counting techniques as applied to nematode parasitism of sheep." **43** (5, Sect. 2), 20.

†v. KERR, K. B., 1957.—" Notes on *Ascaridia dissimilis*." **43** (5, Sect. 2), 20.

†w. FANELLI, Jr., G. M., WILLEY, C. H. & LYNCH, J. E., 1957.—" The influence of duration of therapy and type of infection on the antioxyurid activity of established agents." **43** (5, Sect. 2), 21.

(398q) Eight Jersey steers were treated for gastro-intestinal nematodes with Dow ET-57 (an organic phosphorus compound) at the rate of 100 mg. per kg. of body-weight with total dosages of 5·4–15·25 gm. The percentages of worms removed were *Haemonchus placei* 98%, *Ostertagia ostertagi* 46%, *Trichostrongylus axei* 0·4%, *Cooperia punctata* 59%, *Oesophagostomum radiatum* 30% and *Trichuris* spp. 9%. *Nematodirus helvetianus* and *Trichostrongylus colubriformis* were unaffected. R.T.L.

(398r) Piperazine dihydrochloride in total dosages above 500 mg. per kg. body-weight did not reduce the number of adult or larval *Heterakis gallinarum* in artificially infected chicks below that in the controls but showed promise of reducing the incidence of typhlitis by 50%. A tenth of each total dosage was given orally at ten different periods within 32 hours after the initial dose which preceded the administration of the heterakid eggs. R.T.L.

(398s) The prevention of *Stephanurus dentatus* in pig was effected by using clean gilts as breeding stock only once on the same plot. R.T.L.

(398t) Data from three experiments in rotating ewes and lambs every other day on a fescue-lucerne pasture for 42, 50 and 54 days showed that the faecal egg count of the ewes remained low throughout these periods and in the controls on an unrotated pasture. In the rotated lambs the eggs per gramme reached a peak after four months while in the control lambs it was reached in three months. Thereafter there was a rapid and spontaneous decrease in both groups. Over the grazing season of 146 days the average daily gain in weight of the rotated lambs was 0·15 lb. and in the control lambs 0·23 lb. R.T.L.

(398u) The D.C.F. method seemed to give greater accuracy, speed and flexibility than the McMaster slide technique in ascertaining the total number of eggs per gramme in faeces from lambs experimentally infected with *Haemonchus contortus*, *Trichostrongylus axei* and *Ostertagia circumcincta* when the counts were low but the McMaster technique did not require centrifugation and was more efficient when the eggs per gramme exceeded 2,000. R.T.L.

(398v) Attempts to establish *Ascaridia dissimilis* of turkeys in chickens failed but turkeys were readily infected with *A. galli* of poultry although to a lesser extent than in its usual host. R.T.L.

(398w) In a study on the influence of duration of therapy on their efficacy against *Syphacia obvelata* in mice 250 mg. and 125 mg. per kg. body-weight of piperazine citrate, Parvex and phenothiazine and 35 mg. and 15 mg. per kg. of gentian violet were administered orally for one to eight days. The efficiency of piperazine citrate and Parvex increased with each daily dose, phenothiazine had no appreciable effect while gentian violet was effective but was toxic after the fifth daily dose. It is suggested that standardization of dosage regimens is desirable in laboratories engaged in evaluating anti-oxyurid compounds. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

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†x. VEGORS, H. H., 1957.—" Observations on the arrested development of cattle nematodes." **43** (5, Sect. 2), 21.
†y. GAROIAN, G., 1957.—" Survival of *Ancylostoma caninum* and *Taenia pisiformis* in Thiry fistulae of dogs." **43** (5, Sect. 2), 21.
†z. DAUGHERTY, J. W. & FOSTER, W. B., 1957.—" Comparative studies on amino acid absorption by cestodes." **43** (5, Sect. 2), 21–22.
†ba. FOSTER, W. B. & DAUGHERTY, J. W., 1957.—" Helminth amino acid metabolism. I. Comparative studies on *Raillietina cesticillus* and *Hymenolepis diminuta*." **43** (5, Sect. 2), 22.
†bb. VOGE, M. & HEYNEMANN, D., 1957.—"Effect of high temperatures on development of cestode larvae of the genus *Hymenolepis*." **43** (5, Sect. 2), 22.
†bc. ROTHMAN, A. H., 1957.—" The excystment of tapeworm larvae." **43** (5, Sect. 2), 22–23.
†bd. SCHILLER, E. L., 1957.—" Investigations on the use of X-irradiation as a mechanism for facilitating the study of morphological variations in *Hymenolepis nana*." **43** (5, Sect. 2), 23.
†be. READ, C. P., ROTHMAN, A. H. & PHIFER, K., 1957.—" The differentiation of *Hymenolepis diminuta* and *H. citelli*." **43** (5, Sect. 2), 23.

(398x) The average number of fourth-stage larvae of *Ostertagia ostertagi* recovered from the stomach, and of fourth-stage *Cooperia* spp. larvae recovered from the intestines of yearling Herefords taken from pastures in the spring and kept for 30 days in stalls which were cleaned daily was one-half and one-fifth of the number of larvae recovered from comparable animals left on the pasture for the same period. Apparently a considerable number of the larvae were inhibited in development in those cattle kept inside. R.T.L.

(398z) The absorption of methionine, alanine, valine, glycine and serine by *Raillietina cesticillus* and *Hymenolepis diminuta* depends on unknown physiological factors. Glutamic and aspartic acids are absorbed by mechanisms apparently different from that for neutral amino-acids. *R. cesticillus* had four to six times the activity of that shown by *H. diminuta* in its absorption of neutral amino-acids at physiological temperature. R.T.L.

(398ba) In *Hymenolepis diminuta* there is a larger amount of free amino-acids and especially of taurine but much less proline than in *Raillietina cesticillus* and there are five additional amino-acids. In both, the protein hydrolysates are similar in quantity but *Hymenolepis* also contains cystine. The transaminase reactions, glutamate to aspartate and aspartate to glutamate, alanine to glutamate and glutamate to alanine were similar in both tapeworms but in *Hymenolepis* the amount of glutamate to alanine activity was double and glutamic dehydrogenase activity greater than that of *Raillietina*. R.T.L.

(398bb) Cysticercoids of *Hymenolepis nana* develop normally at temperatures up to 40°C. and show abnormal features at 41–42°C. Those of *H. diminuta* all develop abnormally at 38·5°C. R.T.L.

(398bc) Cysticercoids of *Hymenolepis nana*, *H. diminuta*, *H. citelli* and *Oochoristica symmetrica* were all activated when placed in bile salts dissolved in a Krebs Ringer's phosphate solution of *p*H 6·7 at 37 C. but only *H. diminuta* and *O. symmetrica* excysted. At room temperature (22–26°C.) *O. symmetrica* excysted. All the cysticercoids excysted when trypsin was added to the bile salt solution and pretreatment in a pepsin solution enhanced the excystment rate of the three hymenolepids. R.T.L.

(398bd) By using eggs of *Hymenolepis nana* after exposure to 5 to 40 kilo-roentgens for the experimental infection of mice it was found that the yield of mutations was directly proportional to the roentgen dose. It is concluded that this method may prove useful to taxonomists in evaluating the relative stability of any given morphological character. R.T.L.

(398be) It is concluded that *Hymenolepis diminuta* of the rat and *H. citelli* of the ground-squirrel are distinct species on account of their differences in details of larval development, growth of strobila in different host species and in the same host individual, in modes of egg liberation, in their carbohydrate metabolism, in the effect of metabolism inhibitors and of alterations in the host diet and in electron transport. R.T.L.

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†bf. OGREN, R. E., 1957.—" Studies on the embryonic development of a proteocephalid tapeworm." **43** (5, Sect. 2), 23–24.

†bg. DOUGLAS, L. T., 1957.—" The spermatogenesis of two nematotaeniid cestodes." **43** (5, Sect. 2), 24.

†bh. DOUGLAS, L. T., 1957.—" Fertilization, maturation, and early cleavage in *Baerietta desmognathi* sp.nov. (Nematotaeniidae)." **43** (5, Sect. 2), 24.

†bi. HOLMES, J. C., 1957.—" The effects of concurrent infections with the spiny-headed worm, *Moniliformis dubius*, on the rat tapeworm, *Hymenolepis diminuta*." **43** (5, Sect. 2), 24.

†bj. GILFORD, J. H., 1957.—" A study of the distribution of acid and alkaline glycerophosphatase activity in the cestode *Hymenolepis nana*." **43** (5, Sect. 2), 24–25.

†bk. PHIFER, K., 1957.—" Aldolase in the larval form of *Taenia crassiceps*, Rudolphi 1810." **43** (5, Sect. 2), 25.

†bl. LUTTERMOSER, G. W., 1957.—" Enhancement of the *in vivo* schistosomacidal activity of antimony compounds by glycerol." **43** (5, Sect. 2), 25.

(398bg) In the maturation of the nuclei in *Baerietta diana* and *Distoichometra kozloffi* n.sp. the prophase of the first division occurs simultaneously in all eight nuclei. The syncytial mass divides into individual cells at the metaphase. The eight binucleate masses reunite during late telophase to form an aggregate of 32 secondary spermatocytic nuclei which then form 64 spermatid nuclei. The nuclei elongate into a filiform spiral. An axoneme and middle piece spiral form a middle piece which is single. [*D. kozloffi* is not defined and is therefore a nomen nudum.] R.T.L.

(398bh) The only difference between the early cleavage pattern of *Baerietta desmognathi* n.sp. in *Desmognathus f. fuscus* and *B. diana* in *Batrachoseps attenuatus* is that the first cleavage in *Baerietta desmognathi* is slightly unequal resulting in a large and a small macromere. [*B. desmognathi* n.sp. is a nomen nudum.] R.T.L.

(398bi) In rats simultaneously infected with *Hymenolepis nana* and *Moniliformis dubius* the tapeworms are displaced much further down the gut than the acanthocephalans. Both have longer prepatent periods and the *Hymenolepis* are shorter and lighter than in single infections. In hamsters this displacement and shortening of the prepatent period does not occur and the tapeworms are larger than in rats infected only with *H. nana*. R.T.L.

(398bj) In *Hymenolepis nana* alkaline glycerophosphatase activity was strongest in the cuticle and subcuticular layers. These were apparently free of acid phosphatase activity. Sites in the reproductive organs, ova and spermatozoa showed enzyme activity. In the cysticercoids dissected from infected *Tribolium confusum* both acid and alkaline glycerophosphatases were present; alkaline glycerophosphatase activity was strongest in the inner layer of the cyst wall and in the cuticle and subcuticular layers while acid glycerophosphatase activity was strongest in the parenchyma, weak in the subcuticular regions and apparently absent in the cuticle and cyst wall. Certain large cells in the scolex and suckers also showed enzyme activity. R.T.L.

(398bk) Phifer lists the properties of aldolase from larvae of *Taenia crassiceps*. Of particular interest was the demonstration that the Michaelis constant was $9{\cdot}5 \times 10^{-3}$M and the optimum *p*H for aldolase activity was between 8·5 and 9·0. These values show a much closer similarity to those for mammalian aldolase than to those for the protozoan enzyme. S.W.

(398bl) There was a reduction of 71·9% in the infection when tartar emetic in 50% glycerol was administered orally to mice infected with *Schistosoma mansoni*, whereas it was only 43·6% when tartar emetic alone was injected. Stibophen in 25% glycerol, injected intraperitoneally, reduced the worm burden by 79·7% as compared with 32·3% when stibophen in physiological saline was used. R.T.L.

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†bm. NAJARIAN, H. H., McCARTHY, D., OLSZEWSKI, B., BAYLES, A. & THOMPSON, P. E., 1957.—" Experimental *Schistosoma mansoni* infections in rhesus monkeys with particular reference to chemotherapy." **43** (5, Sect. 2), 26.

†bn. NAIMARK, D. H., OLIVER-GONZALEZ, J., CHAFFEE, E. F. & ANDERSON, R. I., 1957.—" Studies of schistosomiasis mansoni in primates. (1) Initial occurrence of serologic antibodies correlated with egg recovery." **43** (5, Sect. 2), 26.

†bo. RADKE, M. G., BERRIOS-DURAN, L. A. & MORAN, K., 1957.—" A perfusion procedure (Perf-O-Suction) for recovery of schistosome worms." **43** (5, Sect. 2), 26–27.

†bp. HSÜ, H. F. & HSÜ, S. Y. LI, 1957.—" Further studies on the size and shape of the eggs of the geographical strains of *Schistosoma japonicum*." **43** (5, Sect. 2), 27.

†bq. GARSON, S., DURAN, A. & WILLIAMS, J. S., 1957.—" Alterations in serum glutamic-oxaloacetic transaminase (SGO-T) in the course of experimental schistosomiasis mansoni." **43** (5, Sect. 2), 27.

†br. GARSON, S. & WILLIAMS, J. S., 1957.—" Transamination in *Schistosoma mansoni*." **43** (5, Sect. 2), 27–28.

(398bm) Monkeys percutaneously infected with *Schistosoma mansoni* cercariae had cercarial dermatitis at the exposed sites for 24 hours. Eggs appeared in the faeces as early as the 37th day and living worms were present up to 14 months after infection. [The method of carrying out therapeutic tests and assessing the results is briefly described but not the drugs used or the results obtained.] R.T.L.

(398bn) The eggs of *Schistosoma mansoni* first appeared in the faeces of experimentally infected monkeys, regardless of the method of exposure, in 41·5 days (standard deviation 3·53). As the faeces already contained eggs by the time that any of the serological tests (cercarial agglutination, circumoval precipitation and complement fixation with antigens from adults and cercariae) became positive, these methods of diagnosis had no advantage over that of faecal examination in the early stages of schistosomiasis. R.T.L.

(398bo) The time required by the basic plan of perfusion for the recovery of schistosomes has been reduced by the use of special plastic perfusion boards, ex-sanguination of the anaesthetized animals by heart puncture using a collecting bottle on a vacuum line and a Brewer automatic pipetting machine with a foot pedal supplying pressure for the saline injection. The worms forced out of the hepatic portal are picked up by a separatory funnel containing saline with an exhaust outlet connected to a vacuum line and an intake tube with one end lying a quarter of an inch below the saline level in the funnel and a free end for sucking up the worms which can be withdrawn from the funnel into a petri dish. R.T.L.

(398bq) Statistically significant elevations of serum glutamic-oxaloacetic transaminase occurred in the blood from the external jugular vein of male mice harbouring bisexual infections of *Schistosoma mansoni* and reached a peak, at the eighth week after infection, which coincided with the deposition of numerous eggs in the liver. Tentative indications are that no significant elevation occurred in unisexual male infections of two and four weeks' duration although there was a distinct rise at six weeks. It is suggested that, in the early stages, infection of worms of both sexes elicits a more deleterious effect than worms of a single sex. R.T.L.

(398br) Transamination in adult male *Schistosoma mansoni* was studied by means of cell-free worm homogenates. A decreasing order of activity was observed between alpha-ketoglutaric acid and the amino-acids alanine, arginine, aspartic acid and glycine. Pyruvic acid-amino-acid transamination became evident only when glutamic acid served as the amino group donor. The higher rate and wider scope of the reactions observed with alpha-keto-glutaric acid suggest that this keto-acid may play a significant role in the metabolism of *S. mansoni*. R.T.L.

†Abstract ofp aper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

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†bs. HUNTER, III, G. W., RITCHIE, L. S., PAN, C., LIN, S., SUGIURA, S., NAGANO, K. & YOKOGAWA, M., 1957.—" Intradermal tests and their usefulness in the field for the detection of schistosomiasis japonica, paragonimiasis and clonorchiasis." **43** (5, Sect. 2), 28.

†bt. SINDERMANN, C. & ROSENFIELD, A., 1957.—" The ecology of marine dermatitis-producing schistosomes. III. Oxygen consumption of normal and parasitized *Nassarius obsoletus* (*Nassa obsoleta*) under varying conditions of salinity." **43** (5, Sect. 2), 28.

†bu. CABLE, R. M. & FISHER, Jr., F. M., 1957.—" A fourth species of *Neoechinorhynchus* (Acanthocephala) in turtles of the United States." **43** (5, Sect. 2), 29.

†bv. SCOTT, J. A., MacDONALD, E. M. & CROSS, Jr., J. H., 1957.—" Filarial parasites of the rice rat." **43** (5, Sect. 2), 29.

†bw. KRUIDENIER, F. J. & PEEBLES, C. R., 1957.—" Nematodes in Grand Canyon rodents: *Syphacia*, *Gongylonema*, and *Rictularia*." **43** (5, Sect. 2), 29.

†bx. LEVINE, N. D. & BEAMER, P. D., 1957.—" *Platynosomum fastosum* in an Illinois cat." **43** (5, Sect. 2), 29–30.

†by. HALL, J. E., 1957.—" A progenetic lecithodendriid trematode from a calopterygid damselfly naiad." **43** (5, Sect. 2), 30.

(398bs) Data were obtained from tests with antigens from *Schistosoma japonicum* adults and cercariae, *Paragonimus westermanii* and *Clonorchis sinensis* in a dilution of 1:10,000 on known positives and negatives. It is concluded that while the antigens of *S. japonicum* and *P. westermanii* at 1:10,000 dilution promise to be useful aids in clinical diagnosis and in epidemiology, that of *Clonorchis sinensis* is unsatisfactory and needs further study. R.T.L.

(398bt) As the salinity of the environment of *Nassarius obsoletus* markedly influences the rate of emergence of *Austrobilharzia variglandis*, the oxygen consumption of normal and infected snails in salinities of 0 to 35 parts per 1,000 was studied. The general pattern of response was remarkably similar. The greatest oxygen consumption was between 15 and 25 parts per 1,000 and was greatly reduced below 10 parts per 1,000. The snails showed massive tissue hydration when kept in salinities of less than 10 parts per 1,000. R.T.L.

(398bu) A species [not named] of *Neoechinorhynchus* occurs in *Pseudemys scripta troosti* in Arkansas. It is similar to *N. emydis* in the contour of the posterior end of the female, but differs in the width of the uterus and the size and structure of the eggs. R.T.L.

(398bv) Filarial worms from the rice rat, *Oryzomys p. palustris*, belong either to *Litomosoides carinii* or a new closely related species. They can be readily transmitted to *O. p. palustris* by the tropical rat mite but not to the subspecies *O. palustris natator* or to cotton-rats. Neither of these subspecies of the rice rat could be infected with *Litomosoides carinii* from the cotton-rat. R.T.L.

(398bw) A new [unnamed] species of *Syphacia* collected from the rodent *Eutamias d. dorsalis* is characterized by a single mamelon on the male. A new [unnamed] species of *Gongylonema* was collected from *Peromyscus maniculatus rufinus*, *P. boylii rowleyi*, *P. t. truei* and *Reithrodontomys m. megalotis*. The other species mentioned are *Rictularia coloradensis* Hall, 1916, found in *E. d. dorsalis* and *P. m. rufinus*, *Syphacia peromysci* Harkema, 1936 from *P. m. rufinus*, *S. eutamii* Tiner, 1948 from *E. d. dorsalis* and *S. citelli* Tiner & Rausch, 1950 from *Citellus variegatus grammurus*. R.T.L.

(398bx) The occurrence of *Platynosomum fastosum* in a cat is now reported from the North American continent for the first time. The infection was probably acquired in Miami. R.T.L.

(398by) A progenetic trematode belonging to the Lecithodendriinae was found in the body-cavity of *Hetaerina americana* naiads from the lower Tippecanoe River, Indiana. It differs from *Prosthodendrium* in having a conspicuous accessory papilla anterior to the genital pore and in the more posterior position of the gonads. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

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†bz. PAN, C., 1957.—" Studies on the biological control of schistosome-bearing snails: the general histology and topographic microanatomy of *Australorbis glabratus*." **43** (5, Sect. 2), 30.
†ca. OKABE, K., 1957.—" Schistosomiasis in Japan." **43** (5, Sect. 2), 30.
†cb. ETGES, F. J., 1957.—" Studies on the cercariae of the Mountain Lake region." **43** (5, Sect. 2), 30–31.
†cc. HILL, C. H. & ZIMMERMAN, R. E., 1957.—" Further uses of a planetary-type mixing machine adapted for separating worm eggs from feces." **43** (5, Sect. 2), 31.
†cd. HARKEMA, R., McKEEVER, S. & BECKER, D. A., 1957.—" *Trichobilharzia alaskensis*, a new species of avian schistosome from Alaska." **43** (5, Sect. 2), 31–32.
†ce. DEFOREST, A., 1957.—" Larval trematodes of the Columbia Basin, Washington." **43** (5, Sect. 2), 32.
†cf. ULMER, M. J., 1957.—" Notes on *Spirorchis haematobium* (Stunkard, 1922) (Trematoda: Spirorchiidae) in the definitive host." **43** (5, Sect. 2), 32.
†cg. HARGIS, Jr., W. J., 1957.—" The homologies of the clamp sclerites of *Hexostoma*, (Hexostomatidae: Diclidophoroidea)." **43** (5, Sect. 2), 32.

(398ca) Since 40% of the irrigation ditches in the Katayama district were lined with concrete the snail population and the incidence of schistosome infection has been reduced, while at Kurume (Komorino-machi) where the ditches were lined between 1950 and 1954 periodic surveys have failed to reveal the presence of snails. Sodium pentachlorophenate has been applied twice annually for seven years at Nagatoishi. Snails from this area are now much more resistant than others collected where this molluscicide has never been applied. R.T.L.

(398cc) The planetary-type mixing machine [for abstract of description see Helm. Abs., **23,** No. 274bp] has been improved by increasing the width of the top and bottom brass rings of the cylindrical screen basket to half-an-inch and the one inch respectively and by hinging the motor housing so that the basket can be more conveniently removed for cleaning and refilling with faecal material. The screening time has also been reduced by introducing the water for flushing the eggs from the faeces directly into the basket during the operation instead of into the vessel surrounding the basket before starting the screening process. The machine has now successfully separated, from faecal samples, 90% to 100% of the eggs of *Ascaris lumbricoides*, *Hyostrongylus rubidus*, *Oesophagostomum* spp., *Metastrongylus* spp., *Haemonchus contortus*, *Trichostrongylus colubriformis* and *Ancylostoma caninum*. R.T.L.

(398cd) Adults of a schistosome named *Trichobilharzia alaskensis* n.sp. were produced experimentally in 10 to 17 days after infecting Pekin ducklings with apharyngeal, furcocercous, dermatis-producing cercariae liberated by *Limnaea stagnalis* from Alaska. The differences between the new species and *T. ocellata*, *T. elvae* and *T. szidati* are succinctly summarized. R.T.L.

(398ce) Deforest briefly reports that nine groups of cercariae were isolated from *Stagnicola palustris nuttalliana* and *Physa propinqua* in the Columbia Basin, Washington. The highest incidence occurred in those collected from seepage ponds and lakes and the lowest in irrigation canals. R.T.L.

(398cf) Although *Spirorchis haematobium* is a parasite of the vascular system of the painted turtle *Chrysemys picta belli*, specimens have frequently been found by Ulmer in the oesophageal region apparently having left the vessels and wandered through the submucosa causing considerable tissue damage. R.T.L.

(398cg) In *Hexostoma* sp. from *Euthynnus alleteratus* Hargis has observed that "the small laterally projecting elements on the medial and lateral clamp sclerites were actually separate from the main body of the sclerite and not fused as in the descriptions of earlier workers. These small elements appear to be homologues of the basal ends of the opposable middle loop of the clamps of other diclidophoroidids. That portion of each medial and lateral sclerite

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists Philadelphia, October 30 to November 2, 1957.

398—Journal of Parasitology (cont.)

†ch. PEARSON, J. C., 1957.—" Some observations on the life cycle of *Strigea elegans*, Chandler and Rausch, 1947 (Trematoda: Strigeidae)." **43** (5, Sect. 2), 33.
†ci. HOFFMAN, G. L. & HOYME, J. B., 1957.—" The histopathology of the 'tumor' on the brain of the stickleback caused by *Diplostomum baeri eucaliae* Hoffman and Hundley, 1957." **43** (5, Sect. 2), 33.
†cj. PETERS, L. E., 1957.—" The cercarial type in the genus *Allocreadium*." **43** (5, Sect. 2), 35.
†ck. WOOTTON, D. & PETERS, L., 1957.—" Comparative morphology of miracidia in the Gorgoderidae." **43** (5, Sect. 2), 35.
†cl. LEIGH, W. H., 1957.—" Brown and white pelicans as hosts for schistosomes of the genus *Gigantobilharzia*." **43** (5, Sect. 2), 35–36.
†cm. LEIGH, W. H., 1957.—" The life-history of a new trematode of the genus *Paramacroderoides* in the Florida spotted gar." **43** (5, Sect. 2), 36.

which is anterior to this small element probably represents the ventral or anterior loop while the posterior portion represents the dorsal or posterior loop elements of more typical diclidophoroidids. If the preceding is true, then the middle X-shaped clamp sclerite is obviously homologous to the center piece or 'spring' of related monogeneids". R.T.L.

(398ch) *Strigea elegans* from *Nyctea nyctea* in southern Ontario developed in *Gyraulus parvus* and the cercariae entered the tadpoles of *Bufo americanus*, *Rana sylvatica* and *R. clamitans*, becoming free mesocercariae which moved into the hind limbs during the metamorphosis. In the tissues of a garter snake, *Thamnophis sirtalis*, and in domestic ducklings they metamorphosed into encysted encapsulated tetracotyles. Although great horned owls, *Bubo virginianus*, a natural definitive host, were submitted to infection no adults were recovered at autopsy 21 and 113 days later but tetracotyles were found subcutaneously. It is inferred that *S. elegans* may have a four host life-cycle. R.T.L.

(398ci) The so-called "tumour" on the brain of a stickleback proved to be an outpocketing of the dura caused by a *Diplostomum baeri eucaliae* infection. Its epithelium was an outgrowth of the choroid plexus which surrounded the worms at the postero-lateral aspect of the optic lobes. R.T.L.

(398cj) A complete stylet has been found in mature specimens of *Allocreadium lobatum*; although absent in the adult and most metacercariae of *A. ictaluri* a stylet does occur in the very young cyst but is shed and found in various stages of disintegration in the cyst. The cercarial type of the genus is an ophthalmoxiphidiocercaria. R.T.L.

(398ck) The miracidia of *Gorgoderina attenuata*, *Phyllodistomum superbum*, *P. staffordi* and *P. undulans* have 15 epidermal cells in three tiers and there are three kinds of bilaterally symmetrical pores, viz., four groups of three or more in the terebratorium, two ventro-lateral excretory pores usually placed between the second and third tiers and two small pores at the posterior tip and associated with a pair of bristles. R.T.L.

(398cl) A schistosome of the genus *Gigantobilharzia*, which has not been reported previously in pelicans, was found in large numbers in three sick and dying white pelicans and one brown pelican from south Florida. The only morphological differences from *G. huttoni*, which was reared experimentally in parakeets, could be attributed to host influences. R.T.L.

(398cm) Occasionally *Helisoma duryi* produces a hitherto unrecognized cercaria smaller than that of *Paramacroderoides echinus* and lacking its orange pigment. Moreover it has only three to five small oral spines in the first incomplete row as compared with 15 to 17 large spines in the same row in *P. echinus*. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

398—Journal of Parasitology (cont.)

†cn. MILLER, G. C. & BENNETT, H. J., 1957.—"Digenetic trematodes in Louisiana fresh-water fishes." **43** (5, Sect. 2), 36.
†co. BROOKE, M. M. & MELVIN, D. M., 1957.—" Intestinal parasite surveys on Indian reservations in Montana, South Dakota, New Mexico, Arizona, and Wisconsin." **43** (5, Sect. 2), 40.
†cp. WINN, M. M., MOON, A. P., LIN, S. S., ASAKURA, S. & YOSHIDA, H., 1957.—" The effect of changes in *p*H and specific gravity on the recovery of certain helminth eggs and protozoan cysts in the formalin-ether (406th MGL) fecal concentration technique." **43** (5, Sect. 2), 41.
†cq. JACKSON, G. J. & LEWERT, R. M., 1957.—" Immune precipitates on nematode parasites studied *in vitro* with fluorescent and unlabeled serums." **43** (5, Sect. 2), 43.
†cr. KAGAN, I. G. & JESKA, E. L., 1957.—" Serum-agar double diffusion studies with Ascaris antigens. II. Analysis of polysaccharide antigens." **43** (5, Sect. 2), 43–44.
†cs. KAGAN, I. G., 1957.—" Hemagglutination studies with Ascaris antigens." **43** (5, Sect. 2), 44.
†ct. SCOTT, J. A., MacDONALD, E. M. & CROSS, Jr., J. H., 1957.—" Differences in susceptibility of rice rats and cotton rats to various strains of filarial worms." **43** (5, Sect. 2), 44.
†cu. GOLDBERG, E., 1957.—" Glycolysis in *Trichinella spiralis* larvae." **43** (5, Sect. 2), 44–45.
†cv. PEEBLES, C. R., 1957.—" Ultra-structure of *Rhabditis strongyloides*." **43** (5, Sect. 2), 45.
†cw. BABERO, B. B., 1957.—" *Ascaris laevis* migration in experimental hosts." **43** (5, Sect. 2), 45.

(398cn) Of the 629 fresh-water fishes, representing 14 families, collected in Louisiana, 61·3% were infected with some species of digenetic trematode. R.T.L.

(398co) In intestinal parasite surveys of five Indian Reservations in the U.S.A., the most striking findings were the virtual absence of nematode infections other than *Enterobius vermicularis* which ranged from 10% to 25% in 897 stool specimens and 1:352 anal swabs. R.T.L.

(398cp) The formalin-ether technique gave a better concentration of helminth eggs, especially those of *Schistosoma japonicum*, when formalin of *p*H 7 and specific gravity 0·98 was used. R.T.L.

(398cq) The oral cap of precipitate on *Trichinella spiralis* larvae which have been incubated with fluorescent immune serum and unlabelled normal serum, and then washed, emits a bright yellow-green fluorescence whereas when the larvae are incubated with fluorescent normal serum and unlabelled immune serum, and washed, the precipitate does not fluoresce and is hardly visible in near ultra-violet light but can be seen in white light. This indicates that the precipitate formed in specific immune serum is an antibody-antigen mass resulting from a reaction between the antibody of the immune host serum and antigens on the surface of the larva or in its secretions. R.T.L.

(398ct) [The information given in this authors' abstract is essentially the same as that abstracted in No. 398bv above.]

(398cu) In *Trichinella spiralis* larvae there is a mechanism for phosphorylative glycolysis similar to the Emden-Meyerhof scheme of vertebrate tissues. R.T.L.

(398cv) The ultra-structures of the external cuticle, muscle fibres, intestinal epithelium and the excretory system of *Rhabditis strongyloides*, as seen in ultra-thin sections with the aid of an electron microscope, are described. R.T.L.

(398cw) Tracheal migration was repeatedly observed in, and larvae were recovered from the circulatory system, liver and lungs of, eleven species of mammals fed experimentally with embryonated eggs of *Ascaris laevis*. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

398—Journal of Parasitology (cont.)

†cx. SPRENT, J. F. A., 1957.—" The development of *Toxocara canis* (Werner 1782) in the dog." **43** (5, Sect. 2), 45.
†cy. WEINSTEIN, P. P. & JONES, M. F., 1957.—" The axenic cultivation of *Strongyloides ratti* and *Strongyloides* sp. from the rhesus monkey." **43** (5, Sect. 2), 45–46.
†cz. JONES, M. F. & WEINSTEIN, P. P., 1957.—" The axenic cultivation of *Nematospiroides dubius*." **43** (5, Sect. 2), 46.
†da. FRIEDMAN, F. & KAGAN, I. G., 1957.—" Paper chromatography of *Nippostrongylus muris* larvae." **43** (5, Sect. 2), 46.
†db. DOUGHERTY, E. C. & HANSEN, E. L., 1957.—" Unidentified factors required by *Caenorhabditis briggsae* (Nematoda). I. Factors Rb and Cb." **43** (5, Sect. 2), 46–47.
†dc. DOUGHERTY, E. C. & HANSEN, E. L., 1957.—" Unidentified factors required by *Caenorhabditis briggsae* (Nematoda). II. An assay system for factor Cb." **43** (5, Sect. 2), 47.
†dd. SCOTT, J. A., 1957.—" Infection with *Enterobius* in Egypt." **43** (5, Sect. 2), 47.

(398cx) Third-stage larvae of *Toxocara canis* were found in the lungs of puppies at birth and throughout the first week. Some larvae had reached the intestine and had moulted for the third time by the third day. The adult stage was attained in nine days and eggs were passed on the 23rd day. Twenty-nine puppies between one and six months old were all found to be infected with adult *T. canis* while only three out of 29 dogs over six months old had infections. Full development to the adult stage occurred in puppies when fed with embryonated eggs between birth and three weeks of age. In older dogs the embryos did not proceed beyond the second stage and were restricted to the somatic tissues. When infected mice were fed to dogs and foxes three to seven weeks old, full development followed but this did not occur in older dogs. Post-natal infection apparently occurs only in puppies. R.T.L.

(398cy) Filariform larvae of *Strongyloides ratti* and of *Strongyloides* sp. from the Rhesus monkey have been cultivated from the eggs under axenic conditions and normal infections have been induced in rats with the *S. ratti* larvae. On bacterial cultures the *S. ratti* developed in a homogonic manner with a low percentage heterogonically, but in axenic cultures only homogonically. The *Strongyloides* sp. on bacterial cultures developed heterogonically while under axenic conditions development was both direct and indirect in the same flasks. In the males the testes remained immature but the spicules developed normally while in the females only a few eggs were formed and these were infertile. No "parasitic" stages developed in either species even in media in which *Nippostrongylus muris* reached sexual maturity. R.T.L.

(398cz) 90% of the eggs of *Nematospiroides dubius* cultivated under axenic conditions in fresh tissue homogenate supplemented by liver concentrate developed into filariform larvae which gave rise to normal infections in mice. As many as 70,000 filariform larvae were obtained from a single culture. In high concentrations of chick embryo homogenate and rat serum, filariform larvae reached the fifth stage of development *in vitro* but failed to attain sexual maturity. R.T.L.

(398da) Ascending and descending chromatograms of the larvae of *Nippostrongylus muris* revealed five ninhydrin-positive areas in uni-dimensional papers and seven areas in two-dimensional papers. Two fluorescent areas were also present. The free amino-acids were aspartic acid and glycine and the presence of glutamic acid, hydroxyl-phenol amino-acid and tryptophane were suspected. There was also an unknown amino-acid. Chromatograms of living, frozen and lyophilized larvae and the water medium around the frozen larvae gave similar patterns. R.T.L.

(398dd) Data obtained from dilution egg counts made on faeces from about 32,000 individuals in the Egyptian delta, showed that the rates of infection with *Enterobius vermicularis* ranged from 1% to 16% in different villages. About 50% of the 1,853 positive cases had counts of over 550, 10% of above 1,550 and 1% of higher than 3,800. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

398—Journal of Parasitology (cont.)

†de. LEVIN, N. L., 1957.—" Life history studies on *Porrocaecum ensicaudatum*, an avian nematode." **43** (5, Sect. 2), 47–48.

df. CHIPMAN, P. B., 1957.—" The antigenic role of the excretions and secretions of adult *Trichinella spiralis* in the production of immunity in mice." **43** (6), 593–598.

dg. WOOD, I. B. & HALDIMAN, J. T., 1957.—" New locality and host records for the cestode genus *Mesocestoides*." **43** (6), 598.

dh. SCHACHER, J. F., 1957.—" A contribution to the life history and larval morphology of *Toxocara canis*." **43** (6), 599–610, 611–612.

di. HSÜ, H. F. & HSÜ, S. Y. LI, 1957.—" On the strain characteristics of *Schistosoma japonicum* from two isolated endemic areas in Japan." **43** (6), 610.

dj. HOFFMAN, G. L. & HUNDLEY, J. B., 1957.—" The life-cycle of *Diplostomum baeri eucaliae* n.subsp. (Trematoda: Strigeida)." **43** (6), 613–627.

(398de) *Porrocaecum ensicaudatum* is reported in Illinois for the first time from the robin, starling and grackle. The infective larvae were present in the ventral blood vessel and hearts of *Lumbricus terrestris* and *Octolasium lacteum*. When the larva is ingested by the definitive host it penetrates the horny layer of the gizzard and exsheaths within 48 hours. By the third day it is found in the duodenal wall whence it emerges into the intestine on or after the 18th day. Levin states that his experiments have shown that *Spiroptera turdi* Molin is the larva of *P. ensicaudatum*. R.T.L.

(398df) The evidence presented by Campbell (1955) that secretions and excretions of *Trichinella spiralis* form an effective antigen in stimulating the production of immunity in mice is confirmed and extended. To ensure that the antigen was produced only by adults the larvae used to infect rats were irradiated by a dose of 3,700 r. which prevented them from producing larvae although it allowed them to mature to the adult stage. The worms were incubated in a nutrient fluid for two days and the fluid when given to mice in six and twelve daily injections induced a response sufficient to cause a reduction in the number of larvae produced by a challenge infection with 200 larvae 30 days later, but twelve injections were necessary to demonstrate a reduction in the number of adults. The results show that the adult phase, like the pre-adult phase reported earlier, contributes to the total immunity produced in the host. R.T.L.

(398bg) The occurrence in Kansas of *Mesocestoides latus* in the skunk, *Mephitis mephitis*, and *M. lineatus* in the coyote is recorded. *Canis latrans* is a new host record for *M. lineatus*. R.T.L.

(398dh) The morphology of each of the four larval stages and of the immature adult of *Toxocara canis* is described in detail and figured. From a review of the literature, Schacher concludes that there is no reliable record of the occurrence of *Toxocara canis* as an intestinal infection in man, the infections in this host being second-stage larvae in the tissues. R.T.L.

(398di) From material obtained by experimental infections of mice with cercariae of *Schistosoma japonicum* from *Oncomelania nosophora* collected in two isolated endemic areas in Japan, viz., Kyushu and Yamanashi, it is concluded that neither in the size and shape of the eggs nor in the prepatent periods were there any significant differences. R.T.L.

(398dj) Hoffman & Hundley give a key to the seven species of *Diplostomulum* in North American fresh-water fish, including *Diplostomum baeri eucaliae* n.subsp., which was obtained from naturally infected *Anas p. platyrhynchos* and from chicks and the screech owl *Otus asio* which were experimentally infected with metacercariae from the optic lobes of the brook stickleback *Eucalia inconstans*. Its only morphological difference from *D. baeri* Dubois, 1937 is the smaller size of the gonads, but the authors also base the new subspecies on the apparent physiological differences, viz., *D. baeri* has only been found in a species of Stercorariidae in Europe, whereas *D. baeri eucaliae* will develop in chicks, mourning doves, the wild mallard and the screech owl, but not in gulls which belong to the same order as Stercorariidae. R.T.L.

†Abstract of paper presented at the 32nd Annual Meeting of the American Society of Parasitologists, Philadelphia, October 30 to November 2, 1957.

398—Journal of Parasitology (cont.)

dk. TULLOCH, G. S. & SHAPIRO, J. E., 1957.—" The ultra structure of the vitelline cells of *Haematoloechus*." **43** (6), 628–632.
dl. WORLEY, D. E., 1957.—" The effect of a single dose of Trolene (ET-57, Dow Chemical) on fecal egg counts in wintering Hereford cattle." **43** (6), 632.
dm. ROTHMAN, A. H., 1957.—" The larval development of *Hymenolepis diminuta* and *H. citelli*." **43** (6), 643–648.
dn. WEHR, E. E. & HWANG, J. C., 1957.—" Systematic position of *Filaria helicina* Molin, 1858, from the brain cavity of the snakebird, *Anhinga anhinga*." **43** (6), 649–655.
do. DAS, E. N., 1957.—" On juvenile and adult forms of *Pseudoporrorchis indicus*, a new species of Acanthocephala from India." **43** (6), 659–663.
dp. HOREN, W. P., 1957.—" The trichrome stain: a useful technique for staining helminths." **43** (6), 669.

(398dl) A single dose of a new phosphorus compound *o*, *o*-dimethyl *o*-2, 4, 5-trichlorophenyl phosphorothiolate (Trolene), reduced the egg count per gramme of faeces from wintering yearling Hereford cattle from 19·4 e.p.g. before treatment to 3·2 e.p.g. one week later, 2·3 e.p.g. after two weeks, 2·7 after one month, 2·0 after two months, 2·8 after three months and 3·2 after four months whereas the controls gave 11·8 e.p.g. which gradually fell to 9·7 e.p.g. after four months. The final samples from the treated animals gave 3·9 e.p.g. (S.D. 3·9) and those from the controls 6·9 e.p.g. (S.D. 5·6). R.T.L.

(398dm) In the development of the cysticercoids of *Hymenolepis diminuta* and *H. citelli* the scolices, in both, develop externally and then invaginate. Voge's conclusion that in *H. citelli* the scolex develops internally is not valid. Rothman points out that information on cysticercoid development may be very useful in the taxonomy of the species of *Hymenolepis* for, although the adults of *H. diminuta* and *H. citelli* are not readily distinguishable, the mature larvae are easily separated. Excluding the tail, the cyst of *H. diminuta* is cardioid whereas that of *H. citelli* is spherical or ellipsoidal. R.T.L.

(398dn) *Filaria helicina* Molin, 1858 (of which *Filaria anhingae* Wyman, 1868 and *F. wymani* Leidy, 1882 are synonyms) from the cranial cavity of *Plotus anhingae* was placed by Walton in *Serratospiculum* as *S. helicinum* (Molin, 1858) but the thickened cuticular shield surrounding the mouth is not in the form of an epaulette nor does it present a kidney-shaped trilobed structure laterally on either side of the mouth, the eggs are thin shelled, the posterior part of the oesophagus is only slightly broader than the anterior part, the male tail lacks alae and has only one pair of post-anal papillae near the tip and the spicules are similar but unequal. The first-stage larvae is microfilarial, long, slender and devoid of spines. Although according to the classification of Wehr (1935) and Chabaud & Choquet (1953) *Filaria helicina* belongs to Dipetalonematidae, it is now placed in a new genus *Wymania* as *W. helicina* n.comb., and in a new subfamily Anhingofilariinae. R.T.L.

(398do) *Pseudoporrorchis indicus* n.sp. from the intestine of the crow pheasant, *Centropus castanopterus*, and its juveniles from the peritoneum of a snake, *Lycodon* sp., is reported from Amravati (Bombay State). It is larger than *P. centropusi* but has a smaller armed proboscis. The number of longitudinal rows of eight to nine hooks is 20–24 approximately. In *P. houdemeri* the hooks number twelve in each row, while in *P. rotundus* there are 30 longitudinal rows with five hooks in each. R.T.L.

(398dp) A modified trichrome stain, which stains suckers purple, hooklets pink, integument green, reproductive organs and digestive system lavender to purple, is made up as follows: Chromotrope 2R, 0·6 gm.; Fast Green FCF, 0·3 gm; phosphotungstic acid, 0·7 gm.; acetic acid 1·0 ml., and distilled water 100 ml. This stock solution keeps for over a year at room temperature. Small or thin specimens can be stained by immersion in the undiluted solution for five minutes whereas for thick specimens the solution should be diluted (one drop in 3 ml. of distilled water) and the staining continued for 12 hours, but if a longer interval is permissible the longer immersion in a diluted solution reaches the internal tissues without overstaining the integument. R.T.L.

398—Journal of Parasitology (cont.)

dq. MACY, R. W. & DEMOTT, W. R., 1957.—" Ostracods as second intermediate hosts of *Halipegus occidualis* Stafford, 1905 (Trematoda: Hemiuridae)." **43** (6), 680.

dr. ROWAN, W. B., 1957.—" A simple device for determining population density of *Schistosoma mansoni* cercariae in infected waters." **43** (6), 696–697.

(398dq) The known range of *Halipegus occidualis* has been extended by its discovery in three species of amphibians in north-western Oregon. The ostracod *Cypridopsis vidua* has been experimentally infected with cystophorous cercariae from *Helisoma subcreatum*. When specimens containing metacercariae were put in an aquarium containing laboratory-reared *Taricha torosa* larvae, young adult *H. occidualis* were found in the digestive tracts of these newts. This appears to be the first recorded instance of an ostracod acting as an intermediate host for a trematode. R.T.L.

(398dr) Rowan gives a description of an apparatus made from an American type of pressure cooker and a double action bilge pump which has enabled him to record the daily periodicity and density of *Schistosoma mansoni* cercariae in typical streams and rivers in Puerto Rico. A report on the results of these surveys is promised. R.T.L.

399—Journal of the Philippine Medical Association.

a. OCAMPO, A. N., LEON, M. G. DE & DIAZ, N. R., 1957.—" Hepatic abscess of the liver due to ascariasis." **33** (8), 607–611.

400—Journal of the South African Veterinary Medical Association.

a. PURCHASE, H. S., 1957.—"How important is 'liver fluke disease' in South Africa?" **28** (4), 337–340.

(400a) Estimates of the number of sheep and cattle at present being treated for liver-fluke and the number which could advantageously be treated as returned by the officers in charge of veterinary administrative regions in the Union of South Africa are tabulated. At least 10% of the cattle and 5% of the sheep need treatment. The total annual loss attributable to fluke ravages is put at not less than £2,290,000. Information received from seven of the eleven largest abattoirs in the Union is also tabulated. During the period 1951–57 the livers of 5·72% of the 3,204,987 cattle and of 1·97% of the 10,117,265 sheep slaughtered were totally condemned as cirrhotic but this statistical heading included *Stilesia hepatica* infestation, abscesses, parasitic nodules, haemangiomata, perihepatitis with or without adhesions etc. The yearly loss at these abattoirs alone was nearly £23,700. R.T.L.

401—Journal of the Tennessee State Medical Association.

a. YOUNG, M. M., 1957.—" Intestinal obstruction due to massive infestation with *Ascaris lumbricoides*." **50** (4), 151–152.

402—Journal of Urology.

a. HUFFMAN, W. L., 1957.—" Echinococcus disease of kidney: report of a case." **78** (1), 17–21.

403—Khirurgiya. Moscow.

a. BREGADZE, I. L., 1957.—[Surgery in alveolar echinococcosis of the liver.] **33** (3), 26–32. [In Russian.]

404—Klinicheskaya Meditsina. Moscow.

a. BEILIN, I. B., 1957.—[Clinical and roentgenological picture of pulmonary echinococcosis and differential diagnosis of echinococcosis from pulmonary tuberculosis.] **35** (4), 119–121. [In Russian.]

405—Lancet.

a. GAULT, E. W. & WEBB, J. K. G., 1957.—" Tropical eosinophilia. Hepatic lesions related to presence of nematode larvae." Year 1957, **2** (6993), 471–472.

(405a) Although pulmonary symptoms are predominant in tropical eosinophilia there is also hepatomegaly. Both return to normal concurrently with the response of the respiratory symptoms to treatment with arsenic. In four children with the characteristic lung symptoms needle biopsies of the liver showed striking eosinophilic infiltration in the portal triads. In another case, tissue was removed by laparotomy from small whitish patches on the enlarged liver and the portal tracts were dilated by massive eosinophil infiltration; there were also occasional granulomatous foci. Five small pieces of a nematode larva were recovered from the material. R.T.L.

406—Lantmannen.

a. BINGEFORS, S., 1957.—" Förädling av rödklöver för resistens mot stjälknematod." **41** (20), 451.

(406a) This is a one-page summary of Bingefors' doctoral dissertation on the breeding of red clover for resistance to the stem eelworm, *Ditylenchus dipsaci*. Work done on this problem in Sweden is described. Many new strains of red clover have been produced by crossing a resistant variety such as Merkur with a variety like Ultuna which is in other ways suitable for a certain district but which is susceptible to stem eelworm. The new varieties are more resistant than the susceptible parent variety. Nematodes enter resistant plants but do not multiply since larval development is inhibited. Research has also gone on into the different races of stem eelworm. It is reported that the red clover race does not develop in lucerne, that it attacks alsike clover but causes little damage, and that white clover is not attacked by the red clover race. A.E.F.

407—Leaflet. United States Department of Agriculture.

a. ANON., 1957.—" Trichinosis." No. 428, 6 pp.

408—Living Conditions and Health. London.

a. MAO, C. P., 1957.—" Research in schistosomiasis japonica in People's China." **1** (2), 80–89.

(408a) The main research activities carried out on schistosomiasis japonica between 1950 and 1956 at the medical institutions and hospitals in China are summarized. Epidemiological studies revealed new endemic foci in Kiangsu Province and in remote villages in the hill regions of Kwangsi and Yunan Provinces. Studies on the oecology of the Oncomelania vectors, their growth and reproduction and the influence of soil, water, drought, light and temperature on their breeding activities, are outlined. The natural reservoir hosts in China are cattle, buffaloes, horses, pigs, goats, sheep, dogs, cats and rats. As coprophagous animals, dogs and pigs may pass faeces containing viable miracidia without being infected. Although the snails can be killed when buried in soil to a depth of more than 10 cm., this prevalent method is only suitable in clearing irrigation ditches in hill regions, and it is better to dig a new ditch and fill in the old one. A change from rice cultivation to dry-land crops in certain hill regions restricted the distribution of the vectors and of exposure to infected water. Of various mollusicides tested, sodium pentachlorophenate caused 100% mortality within 24 hours in a concentration of 5 parts per million. Snail control by hot water or steam proved impracticable but a CO torch from a specially designed gas generator was as effective as hot water and less expensive in running costs. Control by ducks and other aquatic birds was negligible. Among the protective measures studied were various methods of filtering off or destroying the cercariae, the efficacy of cercarial repellents and the prophylactic use of ammonium antimony gluconate. No noticeable development of immunity took place in experimental animals from the use of antigens from adult worms, cercariae or attenuated cercarial

suspensions. Chinese studies on the pathology, symptomology, treatment and diagnostic methods and on the effect in schistsomiasis japonica of the recently introduced specific drugs are succinctly summarized [but no references are given to published work]. R.T.L.

409—Lyon Chirurgical.

a. KOURIAS, B. & TOBLER, A., 1957.—" L'avenir éloigné des opérés pour kyste hydatique du poumon. Etude de 256 cas sur 305 opérés." **53** (2), 209–232.

410—Lyon Médical.

a. GIRARD, M., COUDERT, J., GARIN, J. P. & ALEX, 1957.—" A propos du traitement médical du kyste hydatique du foie." **89** (31), 99–107.

411—Maroc Médical.

a. LAHBABI, H., 1957.—" La maladie hydatique." **36** (384), 446–448.
b. GAEHLINGER, H. & ACCART, R., 1957.—" Réflexions sur le parasitisme intestinal." **36** (384), 451–455.
c. CHENEBAULT, J. & PAJANACCI, J., 1957.—" A propos d'un cas d'ascaridiose pulmonaire." **36** (386), 707–710.

(411a) Lahbabi reviews common locations of Echinococcus cysts in the human body and the relevant surgical treatments and lists some less usual locations which he has observed in Casablanca. He has not yet found thymol injections effective as treatment. M.McK.

(411b) This is a collection of generalizations relating to the diagnosis and treatment of intestinal parasitism in man, e.g. the faeces should be examined immediately after evacuation, and laboratory diagnosis of the presence of a parasite is no reason for concluding that this is the cause, or only cause of symptoms. M.McK.

412—Marseille Chirurgical.

a. PÉDINIELLI & CÉPI, 1957.—" A propos d'un cas de perforation intestinale par ascaris." **9** (1), 57–59.
b. CHIPPAUX, CORNET & DATCHARY, 1957.—" Un cas de localisation bilharzienne de la vésicule séminale." **9** (1), 146–148.
c. BOURGEON, R., 1957.—" Conception actuelle de l'échinococcose hépatique. Déductions thérapeutiques." **9** (2), 272–276.

413—Médecine Tropicale.

a. BLANC, M. & D'AUBENTON, F., 1957.—" Compte rendu sommaire d'une seconde mission hydrobiologique en Haute-Volta (15 février—17 avril 1957)." **17** (3), 412–415.

(413a) Before embarking on a programme of treatment by D.D.T. for the eradication of simuliid larvae, in French West Africa, it is necessary not only to ascertain the best dosage, but also to investigate the hydrological and entomological conditions of each water course. R.T.L.

414—Mededeling. Stichting voor Plantenveredeling, Wageningen.

a. HUYSMAN [HUIJSMAN], C. A., 1957.—" Veredeling van de aardappel op resistentie tegen *Heterodera rostochiensis* Wollenweber." No. 14, 85 pp. [English summary pp. 73–80.]

(414a) An up-to-date detailed account is given of the breeding of eelworm-resistant potatoes in the Netherlands. The resistant parents most used (certain *Solanum andigenum* lines) are easily crossed with *S. tuberosum*, both being closely related tetraploid species. The resistance appears to be dominantly and monogenetically inherited. The nature of resistance, the effects on pest and plant of the cultivation of resistant potatoes in eelworm-infested soil, and the practical aspects of the breeding programme are discussed. Since 1954, several hundred thousand *andigenum*-X seedlings have been grown in clean soil by Dutch breeders, who send their most promising material to a central station in Wageningen where it is tested, in winter,

for eelworm resistance. A warning is given about the possible occurrence in the Netherlands of physiological races of the eelworm, such as have been found in Scotland and Peru, capable of attacking the new resistant varieties. R.D.W.

415—Medical Journal of Malaya.

a. GRIFFITH, D. H. S., MAURER, S. P. & LIM SWEE CHOO, 1957.—" Further studies on malaria in Krian with a note on filariasis." **12** (1), 348–372.

(415a) This is the first time that filariasis has been reported from Krian, Malaya. When several areas in Krian were being examined for malarial vectors, 29 specimens out of 917 *Anopheles barbirostris* (dark wing) caught at Kuala Kurau were found infected with filarial larvae, probably of *Wuchereria malayi*. There were mature larvae in five of the mosquitoes. Of 35 people with elephantiasis examined from Perak North, 28 came from Kuala Kurau and 19 carriers of microfilariae were found there too. M.MCK.

416—Medical Times. New York.

a. ANON., 1957.—" Treatment of intestinal parasites." **85** (5), 483–494.

(416a) This "refresher" article summarizes the essentials of the principles of diagnosis, natural history and the therapy of intestinal parasites. The various commercial products on the market are tabulated under the chemical name, proprietory name and name of the firm producing each. R.T.L.

417—Meditsinskaya Parazitologiya i Parazitarnie Bolezni. Moscow.

a. MURAVEV, M. I., LISENKO, A. Y., ZHUKOVA, T. A. & LEIKINA, E. S., 1957.—[Parasitic diseases in the Republics of Central Asia and Transcaucasus and further decrease in their incidence.] **26** (4), 391–396. [In Russian.]
b. MUKVOZ, L. G., 1957.—[Prophylaxis of helminthiasis in planning and building large hydrotechnical constructions.] **26** (4), 472–478. [In Russian.]
c. MITROKHIN, V. U., 1957.—[Gradual increase of invasion by Opisthorchis in superinvasions.] **26** (4), 478–479. [In Russian.]
d. KHRAMELASHVILI, N. G., 1957.—[*Dirofilaria repens* under the conjunctiva of the eye.] **26** (4), 481–482. [In Russian: English summary p. 482.]
e. SKRYABIN, K. I., 1957.—[Origin and development of helminthology under conditions of the Soviet Government.] **26** (5), 540–542. [In Russian.]
f. VASILKOVA, Z. G., 1957.—[Results and prospects of development of sanitary helminthology in the U.S.S.R.] **26** (5), 543–548. [In Russian.]
g. PIRUMOV, K. N., 1957.—[Data on development of the control of parasitic diseases in the Armenian S.S.R.] **26** (5), 578–581. [In Russian.]
h. MARUASHVILI, G. M., 1957.—[Control of parasitic diseases in the Georgian S.S.R.] **26** (5), 581–588. [In Russian.]
i. MILYUTINA, E. Y., SIMKHOVICH, E. I. & DIMAND, S. V., 1957.—[Results of the control of malaria and helminthiasis in the Moldavian S.S.R.] **26** (5), 588–592. [In Russian.]
j. AGAEV, B. M., 1957.—[The course of eradication of malaria in the Azerbaijan S.S.R. and on the control of helminthiasis and other parasitic diseases.] **26** (5), 594–598. [In Russian.]
k. BOKHMAN, K. A. & SHAMARDIN, M. V., 1957.—[Eradication of malaria and control of helminthiasis in the Estonian S.S.R.] **26** (5), 598–599. [In Russian.]
l. KVIKLIS, V. N. & TAUNENE, A. I., 1957.—[Eradication of malaria and control of helminthiasis in the Lithuanian S.S.R.] **26** (5), 600–601. [In Russian.]
m. SOPRUNOV, F. F. & TENDETNIK, Y. Y., 1957.—[An experiment on the biological control of ancylostomiasis in coal mines.] **26** (5), 602–612. [In Russian: English summary p. 612.]
n. LEIKINA, E. S., GEFTER, V. A. & ZORIKHINA, V. I., 1957.—[Application of reaction of agglutination with carmine for the early diagnosis of ascariasis in mass examination of the population.] **26** (5), 612–617. [In Russian: English summary p. 617.]

(417a) During the last five-year-plan the helminth infections of the population in Transcaucasus and Central Asia have decreased only by 8%. In 1956 infections in Transcaucasus reached 83·3% in Armenia, 57·5% in Georgia and 20% in Azerbaijan; in Central Asia they were 16% in Tadzhikistan and 6–7% in the remaining republics. Ascarids are the main infection in Transcaucasus; in Central Asia they occur only in foci. Ancylostomiasis

affects 25–50% of the population in parts of Azerbaijan and the Lenkoran' lowland and nearly 100% in the Mari and Ashkhabad regions. The average *Taenia* infection in Central Asia is 0·3–1·2%. Reasons why recent control measures have been ineffective are briefly discussed. G.I.P.

(417c) A hundred metacercariae of *Opisthorchis* were used for each of five successive infections of 18 guinea-pigs at 12 to 15-day intervals. The increase in the number of worms in the bile was determined by autopsy of three animals after each infection and was compared with the infection produced in three controls by 100 metacercariae from the same batch. Taking the infection of the controls always as 100%, the percentage increase in infection with each of the five successive infections was calculated as 71·9, 60·9, 20·0, 2·4 and 3·7% respectively, showing a progressive fall but not complete disappearance. G.I.P.

(417d) An immature *Dirofilaria repens* was recovered from the conjunctiva in the eye of a man from Tbilisi. This is the third case recorded from the Georgian S.S.R. G.I.P.

(417m) In an experiment on the biological control of *Ancylostoma* larvae, a powder preparation of the conidia of predacious fungi (*Arthrobobotrys dolioformis* and *A. oligospora*), including remains of the original substratum, was dispersed on the ground in a coal mine five times in three years at the rate of 100 gm. per sq.m. in polluted and damp places and 50 gm. per sq.m. elsewhere. The preparation was effective for several months and was harmless to man and the timbering. The number of infected persons fell in the three years from 171 to 34 and that of new infections from 63 to 3. G.I.P.

(417n) Of 79 persons reacting positively to both immunological Ascaris reactions, 77·2% gave positive results to the agglutinin reaction with carmine and 96·2% to the micro-precipitin reaction. Although the agglutinin reaction is somewhat less sensitive it is recommended for practical use because of its simpler method of application. The antigen from whole Ascaris females is recommended in preference to the polysaccharide protein fraction as it is more effective and quite stable. G.I.P.

418—Medizinische. Stuttgart.

a. SCHULTZE, E. G., 1957.—" Zur Behandlung der Oxyuriasis und Askaridiasis." Year 1957, No. 8, pp. 299–300.

(418a) Schultze has used the piperazine adipate preparation Vermicompren in the treatment of helminth infections in children. Against Enterobius a dosage of two tablets twice a day (1,200 mg.) for seven days for children under 30 kg. body-weight, or two tablets thrice a day (1,800 mg.) for seven days for those over 30 kg. was successful in all of 60 children treated, although within 28 days, three of the children were positive again. Against Ascaris a dosage of 60 mg. per kg. body-weight daily for seven days was successful in all of eight children treated. Vermicompren was willingly taken by the children and was well tolerated. A.E.F.

419—Mémoires de l'Académie de Chirurgie. Paris.

a. KOURIAS, B. & TOBLER, A., 1957.—" Les résultats à long terme des opérations pour échinococcose pulmonaire. A propos de 260 cas suivis." **83** (4/5), 142–146.
b. ROUSSET, J., 1957.—" Invagination iléale pure à type rétrograde d'origine ascaridienne." **83** (4/5), 170–176.
c. CHATELIN, C. L., 1957.—" Kyste hydatique de la tête du pancréas." **83** (14/16), 440–442.
d. NEGRE, A., 1957.—" Rupture en péritoine libre d'un abcès du foie du à la présence dans le lobe droit d'un *Taenia saginata*." **83** (14/16), 493–495.

420—Military Medicine.

a. CUSHING, E. C., 1957.—" Apparent specific inhibitive action of certain oxytoxic and spasmogenic drugs and substances against cercariae of *S. mansoni*. A preliminary report of *in vitro* tests." **121** (1), 17–21.

b. HAMIT, H. F. & CORTESE, P. T., 1957.—" An extemporaneous study of intestinal parasites in Philippine scouts." **121** (2), 84–90.

(420a) In a search for a prophylactic drug which could kill schistosome cercariae in the blood stream if administered orally within 24 hours after exposure to infection, Cushing has found that *in vitro* Ergonovine, Pitocin, Pitressin and extracts of Yucca leaves and of the roots of *Cucurbita foetidissima* immobilized the cercariae in dilutions of one to twenty millions within five minutes. He suggests further research with oxytoxic and cardiac glucoside drugs and/or their equivalents, and on extracts of species of the Claviceps fungus might yield drugs more suitable for human administration than the ergot alkaloids and their derivatives. R.T.L.

(420b) Evidence of the occurrence of intestinal parasites was obtained from the faeces of 610 out of 974 young adult Filipino soldiers belonging to an infantry regiment stationed at Camp O'Donnell, Tarlac Province, Luzon. A significantly higher incidence of hookworm and of multiple parasitic infections occurred in those on sick call than in healthy control groups. R.T.L.

421—Minerva Chirurgica. Turin.

a. MASSAIOLI, N., 1957.—" Echinococcosi costale." **12** (2), 71–82.

422—Münchener Medizinische Wochenschrift.

a. BERGSMANN, O., MAREK, A. & NINOL, H., 1957.—" Über einen Befall mit *Fasciola hepatica* beim Menschen." **99** (27), 985–987. [English summary p. 985.]

(422a) Bergsmann *et al.* describe a case of *Fasciola hepatica* infection in an 8-year-old boy. Liver biopsy and complement fixation failed to establish the diagnosis, which was only confirmed when ova were recovered. Treatment with emetine was successful. A.E.F.

423—Naturalist. London.

a. THOMPSON, E., 1957.—" A leech new to Yorkshire." No. 863, p. 136.

(423a) *Hemiclepsis marginata* is now added to the list of "Fresh-water leeches of Yorkshire" published by Whitehead in 1943. Thompson discovered a single specimen beneath a stone in the lake at Bretton in south-west Yorkshire. R.T.L.

424—Nature. London.

a. LINKER, A., HOFFMAN, P. & MEYER, K., 1957.—" The hyaluronidase of the leech: an endoglucuronidase." [Correspondence.] **180** (4590), 810–811.

b. MULVEY, R. H., 1957.—" Chromosome number in the sugar-beet nematode *Heterodera schachtii* Schmidt." [Correspondence.] **180** (4596), 1212–1213.

c. DAWES, B. & MULLER, R., 1957.—" Maintenance *in vitro* of *Haplometra cylindracea*." [Correspondence.] **180** (4596), 1217.

d. ROSE, J. H., MICHEL, J. F. & HARRISS, S. T., 1957.—" The sheep lungworm *Protostrongylus brevispiculum* in Great Britain." [Correspondence.] **180** (4598), 1372–1373.

e. MUIRHEAD-THOMSON, R. C., 1957.—" Effect of desiccation on the eggs of *Simulium damnosum*, Theobald." [Correspondence.] **180** (4599), 1432–1433.

f. THOMAS, J. D., 1957.—" Occurrence of *Crepidostomum metoecus* (Braun, 1900) in Britain." [Correspondence.] **180** (4600), 1492–1493.

(424b) Mulvey has studied the chromosome number and arrangement during meiosis of *Heterodera schachtii*. Two polar bodies are produced during oogenesis. Nine bivalents are formed during meiosis and at the first metaphase the largest is about 1 μ long. The spermatozoa are small and tail-less and only one spermatozoon has been observed in each oocyte. S.W.

(424c) Dawes & Muller have maintained *Haplometra cylindracea* for as long as 105 days *in vitro* at 20 C. The main culture media used and the mean survival times were: Hédon-Fleig without glucose, 69 days; Hédon-Fleig with glucose, 71 days; Ringer without glucose, 68 days; Ringer with glucose, 64 days. Sodium dihydrogen phosphate was substituted for disodium hydrogen phosphate in the Hédon-Fleig; the composition of the frog Ringer's solution is given. Abnormalities in spermatogenesis did not appear until after five days in culture, much later than in *Fasciola hepatica* under similar conditions. The distribution of glycogen in flukes freshly removed from the frog's lungs and after culture is described. *H. cylindracea* is far more dependent on aerobic respiration than other helminths so far studied, dying within four hours under anaerobic conditions. During a short period of anaerobiosis (two hours) the lactic acid production was increased three-fold. S.W.

(424d) During observations of the seasonal pattern of lungworm infections in sheep grazing on the Wiltshire Downs, Rose and his co-workers observed first-stage lungworm larvae of an unusual type. Search for the adult was unexpectedly complicated by the presence of a number of species of lungworm unknown to the authors. One of these has been identified as *Protostrongylus brevispiculum* and it is believed that this is the first record of this species in sheep in Britain. The lesions in the lung are superficially identical with those caused by *Muellerius capillaris* and the two species are similar in general appearance. A brief description and one figure are given. There are indications that *P. brevispiculum* is by no means rare. S.W.

(424e) From experiments on large batches of eggs of *Simulium damnosum*, a vector of *Onchocerca volvulus*, from breeding sites in rubber plantations in the rain forest area of Liberia, where the fly breeds throughout the year in the perennial streams and small rivers, Muirhead-Thomson has ascertained that at a laboratory temperature of 27–28 C. and a relative humidity of about 70–95%, desiccation for 24 hours usually killed the eggs and none survived over 48 hours. R.T.L.

(424f) In the British Isles *Crepidostomum metoecus* has been previously recorded only from Ireland. It is now reported from west Wales where *C. metoecus* and *C. farionis* were found together in *Salmo trutta* and *S. salar*. 74% of 1,294 *S. trutta*, 33·9% of 274 *S. salar* and one out of 243 *Anguilla anguilla* (possibly an accidental host) were infected with these two species of *Crepidostomum*. Whereas *C. metoecus* occurred chiefly in the region of the pyloric caeca *C. farionis* occupied a more posterior portion of the intestine. Thomas tabulates the differential characters of the two species and suggests that, as the descriptions and figures of *C. farionis* given by Dollfus, Haderlie and by others seem to be atypical, a re-examination of their specimens may reveal that they had overlooked the possibility of dual infections with *C. metoecus* and *C. farionis*. M.MCK.

425—Nederlands Tijdschrift voor Geneeskunde.

a. ZAAIJER, J., 1957.—" Aandoeningen van de galwegen door ascariden." **101** (30), 1395–1396. [English summary p. 1396.]

(425a) Symptoms resembling those of cholelithiasis in two women were due to Ascaris in the bile-ducts. In cases of biliary disorder, X-ray evidence of dilatation of the bile-ducts should suggest their invasion by Ascaris when the eggs are also found in the faeces and bile. M.MCK.

426—Nematologica.

a. JONES, F. G. W., 1957.—" Soil populations of beet eelworm (*Heterodera schachtii* Schm.) in relation to cropping. III. Further experiments with microplots and with pots." **2** (4), 257–272. [German summary pp. 271–272.]

b. LORDELLO, L. G. E., 1957.—" A note on nematode parasites of red anthurium (*Anthurium andraeanum* Lind.), with a description of *Rotylenchus boocki* n.sp." **2** (4), 273–276. [Portuguese summary p. 276.]

c. FENWICK, D. W., 1957.—" Some experiments on the vacuum distillation of potato root diffusate." **2** (4), 277–284. [German summary p. 284.]
d. HESLING, J. J., 1957.—" *Heterodera major* O. Schmidt 1930 on cereals—a population study." **2** (4), 285–299. [German summary p. 298.]
e. WEISCHER, B., 1957.—" Die Wirkung ionisierender Strahlen auf die Entwicklung von *Heterodera rostochiensis* und *H. schachtii*." **2** (4), 300–305. [English summary p. 305.]
f. FRANKLIN, M. T., 1957.—" *Aphelenchoides composticola* n.sp. and *A. saprophilus* n.sp. from mushroom compost and rotting plant tissues." **2** (4), 306–313. [German summary p. 313.]
g. PAESLER, F., 1957.—" Beschreibung einiger Nematoden aus Champignonbeeten." **2** (4), 314–328. [English summary p. 328. Discussion p. 328.]
h. LUC, M., 1957.—" *Tylenchulus mangenoti* n.sp. (Nematoda—Tylenchulidae)." **2** (4), 329–334. [English summary p. 334.]
i. SCHUURMANS STEKHOVEN, J. H., 1957.—" A note on the peculiar feeding habits of *Telorhabditis longispina* (Reiter)." **2** (4), 335.

(426a) Further experiments with beet eelworm, *Heterodera schachtii*, in microplots are described. Four years' results from a rotational experiment are given together with criticisms of the layout. In an experiment conducted in a peaty clay soil to test the effects of sugar-beet, cress and charlock when grown at different population levels, all treatments caused the populations to decline. Cyst and egg counts were highest after sugar-beet and cress and lowest after charlock; they were also highest at the higher plant population levels but the differences were small and mainly insignificant. The effect of a range of host plants was tested on a plant-for-plant basis in two types of fine sandy loam. That containing an appreciable coarse fraction (19%) gave no response but that containing a very fine fraction bordering on silt (74%) gave increases with most chenopodiaceous and cruciferous hosts. In a pot experiment using low inoculum levels, a significant increase in yield occurred at the lowest inoculum level and there was a significant inverse regression between yield and log. inoculum level. The maximum population increases were 19 times and 84 times for cysts and eggs respectively at the lowest inoculum level. There was no evidence of a "ceiling" effect. The differences in the population response to cultivation of host crops in four sets of microplots set up side by side and subject to the same macro-climatic conditions are discussed. These differences may be due to soil structure/moisture relationships acting on hatch, emergence, migration and root invasion by beet eelworm larvae but biological factors cannot be excluded. F.G.W.J.

(426b) The roots of anthurium are attacked by *Meloidogyne inornata*, *Helicotylenchus nannus* and *Rotylenchus boocki* n.sp. but most commonly by the first which causes very small galls. *R. boocki* is described and figured. It is closest to *R. brachyurus* but differs in having a shorter oesophagus, in the distance between the stylet base and the opening of the dorsal oesophageal gland being longer and in the large phasmid having a few striae joining it to the outer incisures [as it does in *R. coheni* with which no comparison is made]. J.B.G.

(426c) Fenwick found that there was no appreciable loss in activity when potato root was maintained at 50° C. for two hours, 40° C. for four hours or 30° C. for eight hours. He describes an apparatus for the vacuum concentration of potato-root diffusate at 30–35° C. A reduction in volume by a factor of 20 was achieved using this apparatus; the loss of active principle under these conditions was approximately 10–20%. Similar results were obtained in large scale tests at Reading using a commercial milk evaporator. D.W.F.

(426d) Oats, wheat and barley were grown in soil inoculated with different numbers of the cereal root eelworm. The increase of the eelworm was greatest at the lowest inoculum levels; oats were the most efficient host, followed by barley and wheat. Plant susceptibility, assessed by plant height measurement, showed that oats were most susceptible, followed by wheat and barley. There was a decrease of the mean size and mean egg content of new cysts with increase of inoculum, but the inoculum level had no effect on the egg content of cysts of the same size. Barley tended to produce relatively more large cysts than the other two cereals. J.J.H.

(426e) Radium was used to irradiate cysts of *H. rostochiensis* and *H. schachtii*. The dosage was 400 Roentgens per hour from a spectrum consisting mainly of gamma rays and neutrons.

Exposure times less than 72 hours had no apparent effect on the eelworms, but longer exposure produced differences in the rate of hatching and development of the eelworm larvae, and reduced the rate of reproduction. No mutative variations of the body size were observed. J.J.H.

(426f) *Aphelenchoides composticola* n.sp., a destructive parasite of mushroom mycelium, differs from *A. parietinus* in size and proportions and in having three instead of four incisures on the lateral field. Males are common and have smoothly curved aphelenchoid spicules. *A. saprophilus* n.sp. is common in rotting plant tissues. It differs from *A. parietinus* in being longer and more slender and having a relatively shorter egg and finer annulations. The spicules are strong, not perfectly smooth in outline and with slightly knobbed tips to the dorsal limbs. Both species are easily cultured on an agar-fungus medium on which the average dimensions may change after some generations. M.T.F.

(426g) Paesler describes seven species of nematodes found in mushroom beds. *Bunonema* (*Serronema*) *dentata* n.subg., n.sp. is the type of a new subgenus *Serronema*. It is characterized by having a row of warts like the teeth of a saw along the right side of the body: the anterior third points forwards, the posterior two-thirds backwards. *Ditylenchus* sp. is compared with *D. destructor* from potatoes. It differs in size and proportions and in stylet length. *Deladenus obesus* is described for the first time from Germany. *Aphelenchoides winchesi* var. *diversus* n.var. differs from *A. winchesi* Goodey in having a more variable median oesophageal bulb, in the shape of the male tail and the position of the papillae and in the stouter body and shorter stylet. *A. oxurus* n.sp. is represented only by females; it averages 0·59 mm. long, 0·024 mm. broad, V = 80%, stylet 19·5 μ without basal knobs; there is no post-vulval sac. Both males and females of *A. spinosus* n.sp. are described but no diagnostic relationships are given. *A. cyrtus* n.sp. is very close to *A. parietinus*; the most striking distinctive character is the bow shape taken on by both sexes when killed by heat. M.T.F.

(426h) *Tylenchulus mangenoti* n.sp. is described and figured from *Dorstenia embergeri*. It differs from *T. semi-penetrans* in the shape and size of the female, the presence of a well developed female tail, and the male having a degenerate fore part of the oesophagus and a long narrow tail. A functional anus is present in *T. mangenoti* and Luc presents arguments in favour of a functional anus in other members of the Tylenchulidae. J.B.G.

(426i) Stekhoven identified nematodes, which were destroying the eggs of the frog *Eusophus taeniatus* in Chile, as *Telorhabditis longispina* (Reiter, 1928) [=*Rhabditoides longispina* (Reiter, 1928) Dougherty, 1953]. The nematodes were found within the gelatinous egg envelope. [The reference given at the end of the article should read Reiter, M. (1928) not Reiter, G. (1952).] J.B.G.

427—New Scientist. London.

a. MAEGRAITH, B., 1957.—"The Chinese are 'liquidating' their disease problems." **3** (55), 19–21.

(427a) Following a recent visit to China, Maegraith gives a popular account of the immense and carefully organized efforts now being made to promote hygiene and to control epidemics in cities and rural areas. He attributes the comparative rarity of *Taenia solium* and *Trichinella spiralis* to the custom of thoroughly cooking all food. In the control of schistosomiasis japonica 70,000 workers are already engaged and the killing of the snail vectors, by flame throwers and arsenical sprays, and by ditching in winter, is in the hands of trained teams of local farmers. The contents of house and house-boat privies are collected daily and poured into large communal earthenware containers which are sealed and left until the ammonia kills the helminth eggs. The manure then becomes the cheapest and most valuable manure for use on the fields. R.T.L.

428—New Zealand Journal of Agriculture.

a. ELLIOTT, D. C., THOMAS, P. L. & O'GRADY, B., 1957.—" A comparison of the effects of copper methylarsenate and finely ground phenothiazine on worms in sheep." **95** (6), 601.
b. SALISBURY, R. M. & STAPLES, E. L. J., 1957.—" Toxicity of copper methylarsenate to sheep." **95** (6), 601–602.

(428a) Although copper methylarsenate is effective against *Moniezia expansa*, the only roundworm in sheep against which it is satisfactory is *Haemonchus contortus*. Details are tabulated of the results of a recent trial, carried out at Wallaceville Animal Research Station, from which it is concluded that finely ground phenothiazine is superior to copper methylarsenate for the treatment of roundworms in sheep. R.T.L.

(428b) Death from severe kidney damage occurred within 14 days after dosing lambs with copper methylarsenate and it is concluded from field trials that the margin of safety is far too slender for its general use in the field to be recommended. R.T.L.

429—New Zealand Medical Journal.

a. McCARTHY, D. D., 1957.—" The epidemiology of *Echinococcus granulosus* in New Zealand." **56** (313), 206–212.
b. DUNGAL, N., 1957.—" Eradication of hydatid disease in Iceland." **56** (313), 213–222.

(429a) The incidence of hydatid in sheep in New Zealand varies with the locality. Little is known of the causes of this variation apart from the different concentrations of sheep and dogs. Gemmell (personal communication) found 12% of lambs of an average age of four months, and 75% of sheep of six years of age infected at Christchurch and, at a Wellington abattoir, observed the infection in 20·7% of two-year-old wethers and 75% of six-year-old ewes. The incidence in pigs is 20% to 30% but, although lower than in cattle may have more significance because of the greater frequency of domestic killings. Only the dog is known as a definitive host in New Zealand but the role of weasels, stoats, cats and hedgehogs merits investigation. Whether sheep acquire infection mainly at pasture or when herded for various purposes is not known. Experimental control measures have not reduced the incidence in animals but may have reduced the degree of infestation. Although Iceland has eradicated hydatid, the housing of New Zealand's 32 million sheep for six months is not practical. All the possible means of spread must be investigated before control can be successful. The incidence of hydatid as the main cause of disease among new patients admitted to New Zealand hospitals in 1948–54 and their distribution by provinces are tabulated. M.McK.

(429b) In this detailed account of the history of Echinococcus infection and its eradication in Iceland, Dungal quotes incidences of human disease and infection observed in the 19th and 20th centuries and concludes that one out of every four or five adults born in the eighteen-sixties has had a hydatid cyst. Hydatid is not seen now in people under 60 years of age. The eradication measures, which have been more or less enforced, include the distribution in 1863 of an explanatory pamphlet to every family in the country followed by powerful propaganda through the schools, the treatment of all dogs once a year and the prohibition of the feeding of the entrails of cattle and sheep to dogs. Incidental changes favoured eradication: thus ewes are no longer kept near the homestead for milking and this has eliminated a close contact between sheep, dogs and women; in addition lambs are now killed at four or five months of age whereas previously the main sources of meat were the three to four-year-old wethers. This last change has probably been the most important factor of all. M.McK.

430—New Zealand Veterinary Journal.

a. LAING, A. D. M. G., 1957.—" The veterinary surgeon and taeniid worms of farm animals." **5** (3), 71–73.
b. BATHAM, E. J., 1957.—" Notes on viability of hydatid cysts and eggs." **5** (3), 74–76.
c. BATHAM, E. J., 1957.—" Variations in infestations shown by dogs following a fixed feeding of hydatid scolices (*Echinococcus granulosus*)." **5** (3), 76–78.

(430a) Although for many years past the simple measures required to break the life-cycle of *Echinococcus granulosus* have been widely publicized in New Zealand, the economic

loss from condemnation of livers at freezing works amounts annually to about £1,500,000 on their overseas prices, not including the potential export value of the lungs of the sheep, cattle and pigs. It is also estimated that at least one to two hundred persons in New Zealand acquire hydatid annually. There are about 200,000 to 250,000 working dogs and the custom on the farms of feeding them with raw offal is the principal cause of the present situation. Farmers are however now organizing hydatid eradication schemes on an area basis. Attention is directed to the suggestion of the Department of Agriculture that the liver be removed from the make-up of the schedule price and payment be made for the sound livers in each line killed. R.T.L.

(430b) After hydatid cysts from sheep had been exposed for 8 to 15 days to winter conditions at Dunedin most of the scolices were alive after 12 days, many after 21 days and a few after 24 days. Live scolices could be found in largely collapsed cysts in severely decomposed livers and lungs. The infestations resulting from the peritoneal injection of mice with Echinococcus eggs from one to 365 days old are tabulated. Those 12 days old, and under, gave rise to hydatids but thereafter viability fell rapidly. Although some of the eggs kept dry for one year caused cream coloured spots, the evidence that these were due to the Echinococcus infection was inconclusive. R.T.L.

(430c) Batham has tested Barnett's hypothesis that only about one dog in three is liable to become infected after eating hydatid cysts. In his experiments on 107 dogs only 6 failed to become infested from a single 0·5 ml. dose of scolices, while 76 acquired over 1,000 worms each. The resulting infestation varied widely in three out of four dogs tested several times in succession with constant doses of scolices. He suggests that the amount and constitution of the bile and the rate of passage of food through the intestine may affect the establishment of the scolices in the intestinal wall. R.T.L.

431—North Carolina Medical Journal.

a. McCRACKEN, J. P., 1957.—" Strongyloidiasis with probable cardiac involvement." **18** (5), 186–190.

432—Outlook on Agriculture. London.

a. PEACOCK, F. C., 1957.—" Plant parasitic eelworms." **1** (5), 188–196.

(432a) This is a general account of plant-parasitic eelworms with particular reference to *Heterodera* spp. and *Meloidogyne* spp. There are short sections on host-parasite relationships, including types of resistance, and control. M.T.F.

433—Parasitology.

a. CROFTON, H. D., 1957.—" Nematode parasite populations in sheep on lowland farms. III. The seasonal incidence of species." **47** (3/4), 304–318.
b. BIRD, A. F. & DEUTSCH, K., 1957.—" The structure of the cuticle of *Ascaris lumbricoides* var. *suis*." **47** (3/4), 319–328.
c. DISSANAIKE, A. S., 1957.—" The morphology and life cycle of *Nosema helminthorum* Moniez, 1887." **47** (3/4), 335–346.
d. SPRENT, J. F. A., 1957.—" A new species of *Neoascaris* from *Rattus assimilis*, with a redefinition of the genus." **47** (3/4), 350–360.
e. CRAGG, J. B., FOSTER, R. & VINCENT, M., 1957.—" Larval trematodes (Brachylaemidae) from the slugs *Milax sowerbii* (Férussac), *Agriolimax reticulatus* (Müller) and *Arion lusitanicus* Mabille." **47** (3/4), 396–404.
f. JAYEWARDENE, L. G., 1957.—" The merthiolate iodine formaldehyde concentration technique for the detection of parasitic material in faecal samples." **47** (3/4), 405–412.
g. MICHELSON, E. H., 1957.—" Studies on the biological control of schistosome-bearing snails. Predators and parasites of fresh-water mollusca: a review of the literature." **47** (3/4), 413–426.
h. YEH, L. S., 1957.—" On a new paramphistomid trematode, *Gigantocotyle lerouxi* sp.n. from the stomach of the red lechwe, *Onotragus leche* from Northern Rhodesia." **47** (3/4), 432–434.
i. GUPTA, P. D., 1957.—" On *Psilochasmus indicus* sp.n. (family Psilostomidae Odhner, 1913)." **47** (3/4), 452–456.

(433a) From a statistical analysis of the seasonal variation in numbers of different species

of gastro-intestinal nematodes in ewes and lambs in several flocks in south-west England, Crofton outlines a theory of seasonal incidence. Following his previous demonstration that the increase of populations in lambs is of the logarithmic type he proposes two mathematical expressions : $P_t = P_o E^t$ and $P_t = P_o(1+E)^t$ where P_t is the number of individuals at time t, P_o is the number of individuals initially, E is the intrinsic rate of increase of individuals and t is the time measured in generation intervals. Data are given for the calculation of generation intervals of the various species. The theory described appears to fit the observed data, including that reported by other workers, for all the species except *Nematodirus* spp. which is a truly semelparous form and must be considered as a special case. [It is not possible to do justice to this work in a brief abstract.] S.W.

(433b) Bird & Deutsch confirm the presence of nine layers in the cuticle of *Ascaris umbricoides* from the pig. Examination of freshly cut frozen sections by phase contrast showed the inner cortical layer to be structurally different from the homogeneous layer and that the fibrillar layer consists of distinct branches which join to form structures believed to be pore canals. Electron microscopy revealed that there is a ridged osmiophilic layer, less than a thousand Ångström units thick, on the outer surface of the cortical layer, that the external cortical layer has radial striations which appear to link with those radiating from a process at the top of the structure arising from the fibrillar layer, and that the osmium-fixed homogeneous layer consists of fine radial striations which appear to penetrate the boundary layer and part of the fibre layers. Electron micrographs also frequently showed a dense population of small rod-like bacteria in the transverse grooves; these were isolated in pure culture and are believed to be *Pseudomonas aeruginosa*. The paper is illustrated with 21 photomicrographs. S.W.

(433c) Dissanaike describes the morphology and life-history of *Nosema helminthorum*, parasitic in *Moniezia* from sheep in Britain. The spores are swallowed by the sheep and, when they come into contact with the tapeworms, extrude filaments with sporoplasms attached to their tips. These penetrate the cuticle and pass into the tissues where schizogony takes place; this occurs in two phases and the second phase gives rise to elongated sporont mother cells; in some worms the second phase takes on a different pattern and fusiform cells with long processes are formed. In the precursors of the sporonts the nuclei are divided but not separated and fuse either before the sporont stage or later. The sporonts are usually uninucleate. A chitinous spore wall is secreted, the filament is formed in the central axis of the cytoplasm and the rest of the cytoplasm is transformed into sporoplasm. The spore then becomes infective to a new host. The author thinks it unlikely that the oribatid mite vectors of *Moniezia* play any part in this life-cycle, except possibly by accidentally swallowing and transporting spores. S.W.

(433d) Sprent describes and illustrates *Neoascaris mackerrasae* n.sp. from the small intestine of *Rattus assimilis* in Australia. The new species differs from *N. vitulorum* in the following characters: the nucleus of the dorsal oesophageal gland is oval and lies in the dorsal sector of the oesophageal ventriculus whereas in *N. vitulorum* it is elongate and lies in the subventral sectors, the vulva is situated posteriorly to the anterior quarter of the body, the eggs are very coarsely pitted, the spicules are U-shaped in cross section and both male and female are smaller. Rudimentary cervical alae are present and the oesophageal glands are unequally distributed; *Neoascaris* is redefined to include these characters and is transferred to the Toxocaridae. S.W.

(433e) Cragg *et al.* examined more than 3,000 slugs belonging to ten species and found brachylaemid metacercariae in *Milax sowerbii*, *Agriolimax reticulatus* and, in a few instances, in *Arion ater* and *A. lusitanicus*. A single sporocyst was found in *A. lusitanicus*. The metacercariae were, without exception, in the renal tissue. Four developmental stages were recognizable and are described and illustrated. The third stage, termed the "corrugated stage" because the median part of the body was extensively and permanently furrowed regardless of the extension or contraction of the body, appears to be unique. Flame cells were absent. S.W.

(433f) Jayewardene describes a series of comparative tests of the efficiency of the merthiolate iodine formaldehyde concentration (M.I.F.C.) technique, Willis's salt flotation and direct smear in the detection of helminth ova and protozoa in faeces. The M.I.F.C. technique appeared to give better results than did the other two in the examination for helminths but was less satisfactory for protozoa. The staining reactions and appearance in M.I.F.C. preparations of the eggs or larvae of Ascaris, Trichuris, Necator, Enterobius, Taenia and Strongyloides are described. S.W.

(433g) In this review Michelson lists and briefly discusses the algae, fungi, bacteria and protozoa, flatworms and nematodes, annelids, rotifers, arthropods and molluscs, amphibians, reptiles, fish, mammals and birds which have been implicated as predators or destructive parasites of fresh-water molluscs. He points out that there is a great paucity of significant experimental and quantitative data and that present knowledge gives little rational basis for selecting a specific organism or group of organisms for further study as potential control agents of schistosome intermediaries. There is an extensive bibliography. S.W.

(433h) Yeh describes and figures *Gigantocotyle lerouxi* n.sp. from the abomasum of *Onotragus leche* in Northern Rhodesia. The new species resembles *G. formosanum* most closely but is larger, has a different geographical distribution and has long, sinuous caeca reaching to the posterior end of the body, whereas in *G. formosanum* they are straight and never extend beyond the anterior border of the posterior sucker. He also records, for the first time from the Chinese mainland, *G. formosanum* from a domestic buffalo. S.W.

(433i) Gupta discusses *Psilochasmus*, emends the diagnosis of *P. oxyurus* and reduces *P. agilis* to synonymy with it. He records *Casarca rutila* as a new host of *P. oxyurus* and describes and figures *P. indicus* n.sp. from the same host. The new species is differentiated from *P. oxyurus* by the position of the genital pore, which lies in front of the intestinal bifurcation, and the shape of the testes. S.W.

434—Pédiatrie. Lyons.

a. SENDRA, L., PHELINE, C., LEGEAIS, G. & TOUBOUL, R., 1957.—" A propos d'un kyste hydatique du cerveau chez un enfant de sept ans." **12** (1), 75–77.
b. D'OELSNITZ, M., DUPLAY, J. & CHAMPEAU, 1957.—" Volumineux kyste hydatique temporal opéré chez un enfant de dix ans." **12** (1), 84–87.

435—Pflanzenschutzberichte. Vienna.

a. SCHREIER, O., 1957.—" Der Rübennematode (*Heterodera schachtii* O. Schm.), Auftreten in Österreich und Beziehung zur Rapsdecke." **18** (8/12), 113–118. [English summary p. 118.]

(435a) The prevalence of the sugar-beet eelworm, *Heterodera schachtii*, in Austria is discussed and it is suggested that late sown rape favours the increase of this nematode. H.R.W.

436—Phytopathology.

a. SHER, S. A., 1957.—" A disease of roses caused by a root-lesion nematode, *Pratylenchus vulnus*." **47** (12), 703–706.

(436a) *Pratylenchus vulnus* was observed and shown experimentally to cause a disease of roses characterized by small necrotic root systems and stunted chlorotic plants. *Trichodorus christiei* did not survive longer than a year on the roots and caused no disease. Fumigation with D-D mixture, Dowfume W-85 (1,2-dibromomethane) and chloropicrin eliminated the disease by eliminating the nematodes. J.B.G.

437—Plant Disease Reporter.

a. ROSS, J. P. & BRIM, C. A., 1957.—" Resistance of soybeans to the soybean cyst nematode as determined by a double-row method." **41** (11), 923–924.
b. VAN GUNDY, S. D., 1957.—" The first report of a species of *Hemicycliophora* attacking citrus roots." **41** (12), 1016–1018.
c. RICHARDS, C. D., PLISSEY, E. S. & HILBORN, M. T., 1957.—" Occurrence of plant parasitic nematodes in Maine." **41** (12), 1019–1020.
d. HANSBROUGH, T. & HOLLIS, J. P., 1957.—" The effect of soil fumigation for the control of parasitic nematodes on the growth and yield of loblolly pine seedlings." **41** (12), 1021–1025.
e. CAVENESS, F. E., 1957.—" Root-lesion nematode recovered from eastern redcedar at Halsey, Nebraska." **41** (12), 1058.

(437a) In the spring of 1957, 2,800 selections and varieties of soya bean (*Glycine max*) were tested for resistance to the soya bean cyst nematode, *Heterodera glycines*. Seeds of test plants were sown in rows 5 ft. long, and a known susceptible variety was sown as a control in two rows each 6 in. from the test plant row. Resistance was assessed by counting white cysts on the roots of test and control plants. After the first test, eight varieties were selected for rechecking; two of these proved to be non-resistant. J.J.H.

(437b) Round to elongate root tip galls on rough lemon (*Citrus limonia*) had numerous specimens of *Hemicycliophora* n.sp. attached to them. Various other nematodes were found in the soil but observations showed that the galls were associated with the presence of the *Hemicycliophora*. The new species is to be described elsewhere by Raski. J.B.G.

(437c) Plant-parasitic nematodes of the genera *Pratylenchus*, *Paratylenchus*, *Meloidogyne* and *Aphelenchoides* were found in a total of 41 out of 522 soil samples taken from commercial crops in the State of Maine, U.S.A. J.J.H.

(437d) Among various experiments on the fumigation of soil in coniferous nurseries, eelworms (*Xiphinema americanum* and *Helicotylenchus* sp.) were suppressed and the yield, quality and density of *Pinus taeda* were considerably improved. The nematicides used were D-D mixture at 25 gal. per acre, Nemagon at 7·5 gal. per acre, Dowfume W-85 at 7·5 gal. per acre and Dowfume MC-2 at 2 lb. per 100 sq. ft. J.B.G.

(437e) Seedlings of *Juniperus virginiana* were severely stunted by heavy attacks of *Pratylenchus penetrans*. Four hundred nematodes were recovered from 0·7 gm. of roots after 16 hours in a Baermann funnel. Seedlings of *Pinus ponderosa* were not attacked. J.B.G.

438—Poultry Science.

a. WORLEY, D. E., HANSEN, M. F. & PERSAUD, B. R. B., 1957.—" Action of piperazine compounds on lumen and tissue phase larvae of *Ascaridia galli* (Schrank), a roundworm of chickens." **36** (4), 865–870.

(438a) From this study of the action of some piperazine compounds against the immature stages of *Ascaridia galli* in experimentally infected chickens it appears that the number of lumen larvae was not reduced significantly by caricide, Compound 180-C (1-carbethoxy-4-methylpiperazine hydrochloride) or Parvex, but piperazine dihydrochloride and hexahydrate showed some promise. The presence of caricide in single or extended dosages had no appreciable influence on the life-cycle times of the tissue phase. R.T.L.

439—Proceedings of the American Society for Horticultural Science.

a. BARHAM, W. S. & WINSTEAD, N. N., 1957.—" Inheritance of resistance to root-knot nematodes in tomatoes." **69**, 372–377.

(439a) Eight tomato varieties and breeding lines and several crosses and back-crosses were tested for resistance to *Meloidogyne javanica*, *M. incognita*, *M. incognita* var. *acrita*, *M. arenaria* and *M. hapla*. All were susceptible to *M. hapla*, but a satisfactory level of resistance to the other four species was shown by four lines. It is shown that resistance to *M. incognita*

is monofactorial, but incompletely dominant, and resistance to *M. javanica*, *M. arenaria* and *M. incognita* var. *acrita* is controlled by the same gene. It is considered that F_1 hybrids from crosses between homozygous resistant and homzygous susceptible lines would be sufficiently resistant to use for tomato production in soils infested with one or more of the four nematode species. M.T.F.

440—Proceedings of the New York State Horticultural Society.

a. MAI, W. F. & PARKER, K. G., 1957.—" Nematodes cause serious root disease of cherry and other tree fruits in western New York." 102nd Annual Meeting (1957), pp. 77–81.
b. BRAUN, A. J., 1957.—" Do nematodes threaten the small fruit business?" 102nd Annual Meeting (1957), pp. 101–104.

(440a) Recent instances of poor growth of cherry and apple trees on light-textured soils are attributed primarily to attacks by lesion nematodes, although ectoparasitic root nematodes are probably also involved. The symptoms are described. Soil fumigation prior to planting with, for example, dichloropropene or methyl bromide, is recommended to give the trees a favourable start. Possible methods of encouraging continued growth are being investigated. These include use of organic mulches and weedkillers. R.D.W.

(440b) Braun lists the genera of plant-parasitic nematodes associated with strawberries, raspberries, blackberries and grapes in the U.S.A. in general and (excluding blackberries) in New York State in particular. *Pratylenchus* is the most prevalent genus on all counts. With *Meloidogyne* it is regarded as the most important generally and in the State, although most infestations of the latter genus are regarded as having been brought in on the strawberry planting stock (except on Long Island, where root-knot may be more firmly established) and the genus is not listed as associated with the other fruits in New York. Other genera for which data are given are *Xiphinema*, *Tylenchorhynchus*, *Helicotylenchus*, *Criconemoides*, *Hoplolaimus*, *Paratylenchus*, *Trichodorus*, *Belonolaimus*, *Aphelenchoides* and *Ditylenchus*. R.D.W.

441—Proceedings of the Royal Society of Medicine.

a. RENDLE-SHORT, J., 1957.—" Worms in history with special reference to children." **50** (12), 1013–1018.

(441a) This is an account of early views on the origin of worms in the human body and their association with disease. [Many of the instances cited and illustrated are insect larvae.] Treatment consisted mainly in administering bitters, to drive the worms to the lower intestine, or sometimes sweet enemas to encourage them to go there in the hope that they would then be easily voided. Comparing the reports of Herod Agrippa's fatal illness given by St. Luke and by Josephus, Rendle-Short concludes that his death was caused by acute intestinal obstruction with perforation of the intestine due to or associated with worms. R.T.L.

442—Proceedings of the South Dakota Academy of Science.

a. FASBENDER, M. V., 1957.—" A morphological and histological description of a cestode removed from the small intestine of a short tailed shrew, *Blarina brevicauda*." Year 1956, **35**, 131–143.
b. HUGGHINS, E. J., 1957.—" Ecological studies on a strigeid trematode at Oakwood Lakes, South Dakota." Year 1956, **35**, 204–206.

(442a) In this account of *Hymenolepis anthocephalus* from short-tailed shrews in South Dakota, Fasbender describes the scolex in greater detail than given originally by Van Gundy and records egg sizes of $54{\cdot}4\,\mu$–$64{\cdot}0\,\mu \times 67{\cdot}2\,\mu$–$80{\cdot}0\,\mu$, as compared with Van Gundy's measurements of $30\,\mu \times 47\,\mu$. Although some authors have referred to a rostellum, this was indiscernible in total mounts and consisted of a darkly staining triangular area at the apex of the scolex with no evident projection. M.McK.

(442b) At Oakwood Lakes, South Dakota, *Hysteromorpha triloba* completed its life-cycle in the snail *Gyraulus hirsutus*, the fish *Ameiurus melas* and the cormorant *Phalacrocorax auritus*. In July 1953, Hugghins noticed an extremely high incidence of infection among the snails in the area of the cormorant rookery there. No infection was found in several hundred *Gyraulus* collected there during April, May and the beginning of June of 1954, but eight out of 35 collected on 13th June shed the cercariae. This indicated that *Gyraulus* did not carry the infection through the winter but acquired it afresh each year after the return of the cormorants in the spring. Following the opening of a public recreation area nearby, the cormorants abandoned the site in the summer of 1955 and only one out of 60 *Gyraulus* collected in September of that year was infected. M.McK.

443—Publicações Culturais da Companhia de Diamantes de Angola.

a. GOLVAN, Y. J., 1957.—" Acanthocéphales de l'Angola. I. *Oncicola angolensis* n.sp. (Archiacanthocephala-Pachysentidae), parasite du chacal *Canis adustus* Sundevall." No. 34, pp. 39–50.

(443a) *Oncicola angolensis* n.sp. from the abdominal wall of the jackal, *Canis adustus*, is characterized by its large size, its short neck and absence of collar. The rostellum carries 12 spirals of four and three hooks alternately. The hooks are not barbed. The egg-shell is bivalve surrounding the embryo like a horn with the upper and lower openings filled by a mucous plug. When the valves burst open along the hinges the egg and embryo emerge through the larger polar opening. This method appears to be the first of its kind to be described from a helminth. R.T.L.

444—Queensland Journal of Agricultural Science.

a. SMITH, W. A., 1957.—" Root-knot nematode control investigations in tobacco in Queensland." **14** (3), 155–165.

(444a) *Meloidogyne javanica* is a serious pest of tobacco in North Queensland. Although crop management procedures have proved beneficial none has proved reliable. Field trials with D-D mixture, ethylene dibromide and chlorobromopropene are reported from Mareeba where there is light grey sandy soil and from Claredale where the light textured soil is of the Burdekin association. The results on infested seedlings indicate that irrespective of the use of nematicides a trace even of galling in the seedlings can be primarily responsible for appreciable economic losses. Most of the tobacco in Queensland is irrigated and has a recent history of heavy infestations but the data presented show that the use of nematicides can increase threefold the yield of these crops. An appendix records the extent of root galling on tobacco during six successive years in a crop rotation trial on land previously used for grazing. R.T.L.

445—Rendiconti. Istituto Superiore di Sanità. Rome.

a. RICCI, M. & CORBO, S., 1957.—" Sull'azione dell'adipato di piperazina verso *E. vermicularis* e *A. lumbricoides*." **20** (3), 258–266. [English, French & German summaries pp. 258–260.]

(445a) [This paper was also published in *Riv. Parassit.*, 1956, **17**, 97–104. For abstract see Helm. Abs., **25**, No. 136c.]

446—Revista de Biología Tropical. Universidad de Costa Rica.

a. BIAGI F., F., VILLA T., S. & ALVAREZ, G., 1957.—" Nódulos en la submucosa intestina producidos por *Ancylostoma duodenale* (Dubini, 1843)." **5** (1), 35–43. [English summary p. 37.]

b. JIMÉNEZ-QUIRÓS, O. & BRENES, R. R., 1957.—" Helmintos de la República de Costa Rica. V. Sobre la validez del género *Controrchis* Price, 1928 (Trematoda, Dicrocoeliidae) y descripción de *Controrchis caballeroi* n.sp." **5** (1), 103–121. [English summary p. 113.]

(446a) Three red nodules formed by haemorrhagic areas and inflamed zones characterized chiefly by eosinophil and neutrophil infiltration were found at autopsy in the intestinal submucosa of a Mexican. The nodules contained large numbers of hookworm eggs and

larvae and in one an adult female *Ancylostoma duodenale* was found. No parasites were seen in the intestinal lumen. The presence of eggs in the nodules suggested the possibility of auto-infection and that the hookworms may have survived there for a time. M.MCK.

(446b) Jiménez-Quirós & Brenes describe *Controrchis caballeroi* n.sp., from the monkey *Alouatta p. palliata* from Costa Rica, and tabulate its characters with those of *C. biliophilus*. The genus *Controrchis* is redescribed. The new species differs from *C. biliophilus* chiefly in being larger (5·416 mm.–6·551 mm. as compared with 2·5 mm.–3 mm.) and the digitate, tridigitate and lobular vitelline follicles are located mainly extra-caecally. The eggs measure 0·045 mm.–0·048 mm. × 0·024 mm.–0·027 mm. (as compared with 0·035 mm.–0·038 mm. × 0·021 mm.–0·024 mm.) and have a well defined external shell; operculum and opercular opening are toothed. The presence of the worms had resulted in adenomatous hyperplasia around the bile-ducts and fibrous chronic pericholangitis. M.MCK.

447—Revista de la Facultad de Medicina. Bogotá.

a. LICHTENBERGER, E., 1957.—" Equinococosis humana (quiste hidatidico). Dos casos." **25** (3/4), 119–127.

448—Revue Neurologique.

a. LAFON, R., GROS, C., LABAUGE, R., VLAOVITCH, B. & RIBSTEIN, M., 1957.—" A propos de trois cas de cysticercose du névraxe." **96** (1), 9–18.

449—Rhodesia Agricultural Journal.

a. MARTIN, G. C., 1957.—" Four kinds of root-knot nematode." **54** (4), 324–326.

450—Sborník Vysoké Školy Zemědělské a Lesnické v Brně. Rada B. Spisy Fakulty Veterinární.

a. SCHANZEL, H., 1957.—" Vliv fenothiazinu na vývoj larev *Dictyocaulus filaria*." **5** (2), 97–104. [German & Russian summaries pp. 103–104.]
b. ZAVADIL, R., 1957.—" Cyathostomosa ptáků, její původci a výskyt v Ceskoslovensku." **5** (2), 105–121. [German & Russian summaries pp. 119–120.]
c. LUCKÝ, Z., 1957.—" Příspěvek k poznání žábrohlístů jižní Moravy." **5** (2), 123–157. [German & Russian summaries pp. 156–157.]
d. LUCKÝ, Z., 1957.—" K rozšíření a specifičnosti příslušníků rodu *Diplostomulum* na jižní Moravě." **5** (2), 191–192. [German & Russian summaries p. 192.]
e. SCHANZEL, H. & BEZDĚKOVÁ, J., 1957.—" Vliv některých strojených hnojiv, postřikových insekticidů a organických rozpustidel na larvy plicních hlístic ovcí." **5** (3), 233–248. [English & Russian summaries pp. 247–248.]
f. SCHANZEL, H., 1957.—" Vliv některých chemických látek na ektogenní vývojová stadia střevních hlístic ovcí." **5** (4), 325–333. [English & Russian summaries p. 332.]

(450a) In order to study the effect of phenothiazine on the development of larvae of *Dictyocaulus filaria*, Schanzel carried out a group of experiments. In the first group he culturep larvae of *D. filaria* on the faeces of sheep dosed with 30 gm. of phenothiazine and found that faeces obtained on the first day after dosing had considerable larvicidal effect, but that this property was absent from the faeces obtained on the fifth day after dosing. In the second group the faeces were obtained from sheep which had daily access over a month to a phenothiazine-salt lick (1:9); these had no larvicidal properties. Serum obtained from sheep of the first group and mixed with faecal cultures of *D. filaria* had larvicidal properties if taken 8 to 24 hours after dosing; after 48 hours this action was poor and had disappeared completely after 72 hours. Serum obtained from the sheep in the second group and mixed with a culture of *D. filaria* larvae showed only a very slight effect and the majority of the larvae reached the third stage. A solution of phenothiazine in castor oil resulted in the production of thionol which killed all the larvae while still in the eggs; when they were placed in castor oil alone the eggs hatched. In the author's opinion phenothiazine itself has no larvicidal action, it being only its oxidizing product thionol which has this action. C.R.

(450b) Zavadil describes in detail the morphology and pathogenesis of *Cyathostoma bronchialis* in geese. He also reports the occurrence of *C. boulart* in emu (*Dromicaeus novaehollandiae*) in the Lešná zoological park near Gottwaldow. Comparing these two species he found great similarity in the morphology and in the shape and development of the eggs, but has not so far come to a definite conclusion as to whether they represent the same species. He suggests that there may be an adaptation of *C. bronchialis* to the emu. The variation in the division of the dorsal ray of the bursa is, according to Zavadil, common in *C. bronchialis*. C.R.

(450c) Lucký examined 322 fresh-water fish belonging to 21 species and recorded 34 species of monogenetic flukes. There are no new species but the following are recorded for the first time in Czechoslovakia: *Dactylogyrus bicornis* on *Rhodeus sericeus amarus*, *D. chondrostomi* on *Chondrostoma nasus*, *D. fraternus* on *Alburnus alburnus*, *D. intermedius* on *Carassius carassius*, *D. parvus* on *A. alburnus*, *Dactylogyrus* sp. on *Abramis brama* and *Blicca bjoerkna*, *Gyrodactylus bychowskyi* on *A. brama* and *Misgurnus fossilis*, *G. rarus* on *Perca fluviatilis*, *Gyrodactylus* sp. 1 and sp. 2 on *Leuciscus rutilus*, *Gyrodactylus* sp. 3 on *Tinca tinca*, and *Discocotyle sagittata* on *Alburnoides bipunctatus*. C.R.

(450d) Lucký reports the occurrence of *Diplostomulum* in southern Moravia in 19 species of fish. Of the two species *D. spathaceum* and *D. clavatum*, the latter was the commoner. C.R.

(450e) The authors examined the action on larvae of *Dictyocaulus filaria*, *Protostrongylus kochi* and *Muellerius capillaris* of the fertilizers Thomas slag, kainit, nitro-chalk, sulphate of ammonia, potassium salt, superphosphate, sulphate of potash, the insecticides Systox, Terra-Sytam, Ekatin, Meta-Systox, Ekatox, Aldrin and Dieldrin and various organic compounds including monoethanolamine. Among the fertilizers only nitro-chalk at the rate of 0·03 gm. per 15 sq.cm. kills all first-stage larvae of *D. filaria* up to 18 hours and second-stage larvae up to 54 hours, and first-stage larvae of *P. kochi* and *M. capillaris* up to five days. Land fertilized with nitro-chalk loses its larvicidal properties in two days. A 10% solution of monoethanolamine killed first-stage larvae of *D. filaria* in one hour, second-stage larvae in two hours and the infective stage up to ten hours. C.R.

(450f) Schanzel examined the ovicidal and larvicidal action of fertilizers, insecticides, organic compounds and the anaesthetics S13 and S45 on the developmental stages of *Strongyloides stercoralis*, *Chabertia ovina*, *Oesophagostomum venulosum*, *Trichostrongylus* sp., *Ostertagia* sp. and *Haemonchus contortus*. He found that only nitro-chalk was effective, killing all the stages in 24 hours, but its larvicidal action was halved in 48 hours and disappeared completely in 72 hours. The developmental stages of *H. contortus* were the least resistant to this action and those of *Trichostrongylus* sp. the most resistant. The nitro-chalk used in these experiments was in a concentration of 200 kg. per hectare. C.R.

451—Scientific Monthly. Washington.

a. SCHWARTZ, B. & VEGORS, H. H., 1957.—" Livestock parasites and grass." **84** (5), 229–236.

(451a) Schwartz & Vegors give a general picture of the endoparasites of farm stock and their life-cycles. They detail some of the known data on the role of humidity in promoting the transmission of nematode larvae on pastures. At no time other than when in the free-living stages are parasites more susceptible to control or eradication. Our knowledge of the development and oecology of nematode larvae on pasture is largely empirical and further study is essential to a precise application of preventive measures. How to produce resistance, other than by natural or experimental infections, and how to increase resistance once it has developed, are other challenging problems. M.McK.

452—Shikoku Acta Medica.

a. NISHIMOTO, M. & SAKAMOTO, Y., 1957.—[On the investigation of paragonimiasis in Takaoka-cho, Kochi Prefecture.] **10** (5), 327–331. [In Japanese: English summary p. 327.]

(452a) The sputum and faeces of 12 out of 254 individuals at Funado and Iwato district of Takaoka-cho, Kochi Prefecture, contained *Paragonimus westermanii* eggs. 31 out of 240 individuals were positive to an intradermal test with 0·05 c.c. of antigen prepared from adult worms obtained from experimentally infected dogs. The reaction usually appeared within 10 to 15 minutes. The thorax of 15 out of 31 persons who were positive to the intradermal test gave abnormal findings on X-ray examination. [From English summary.] R.T.L.

453—South African Medical Journal.

a. DE VILLIERS, I. F., 1957.—" The threat of hydatid disease to the South African citizen." **31** (28), 700–702.

b. COCHRANE, J. C., SAGORIN, L. & WILCOCKS, M. G., 1957.—" *Capillaria hepatica* infection in man. A syndrome of extreme eosinophilia, hepatomegaly and hyperglobulinaemia." **31** (30), 751–755.

(453a) After a brief summary of the morphology, pathology, treatment and prevention of hydatid in man, De Villiers outlines the factors contributing to its spread in South Africa, viz., (i) sheep raising, formerly mainly confined to the Karoo and the Karoo type of veld throughout the Union, has now become a profitable branch of farming to wheat and maize growers, (ii) the increase in peri-urban small holdings, (iii) uncontrolled slaughtering of pigs, sheep and cattle in back yards in country towns and the feeding to dogs of meat unfit for human consumption, (iv) the excessive number of dogs in country districts and towns where there is unskilled African labour and (v) the spread of infection by farmers' dogs taken to the seaside and other holiday resorts. R.T.L.

(453b) This is the first case recognized in South Africa and the fifth case of human infection with *Capillaria hepatica*. It occurred in a child 15 months old in which the eosinophilia rose to 78%. The diagnosis was established by finding the ova at liver biopsy. The infection was also present in 19 out of 40 rats examined by the South African Institute for Medical Research in Johannesburg. R.T.L.

454—Srpski Arhiv za Tselokupno Lekarstvo. Belgrade.

a. DAVIDOVIĆ, S. & NINČIĆ, A., 1957.—[Problem of diagnosis of kidney echinococcosis.] **85** (1), 79–84. [In Serbian.]

b. KOSTIĆ, P. & BOŠKOVIĆ, Jr., M. J., 1957.—[Leeches as foreign bodies in vagina of a woman and of an 8-year-old girl.] **85** (1), 89–92. [In Serbian.]

455—Suvremenna Meditsina. Sofia.

*a. RUMENOV, I., 1957.—[Studies on echinococcosis in the Burgas region according to data of the Burgas regional hospital.] **8** (1), 10–21. [In Bulgarian.]

456—Technical Bulletin. Department of Agriculture, Cyprus.

a. GEORGHIOU, G. P., 1957.—" Records and notes of the plant parasitic nematodes of Cyprus." No. TB-3, 5 pp.

(456a) *Meloidogyne javanica* was found on 14 plants including four not previously recorded, viz., *Acacia cyanophylla*, *Coriandrum sativum*, *Cheiranthus cheiri* and *Malva* sp. *Meloidogyne arenaria* is recorded from two new hosts, *Vigna sinensis* and *Prunus persica*, as well as from potato. Twelve other plants are recorded as attacked by undetermined species of *Meloidogyne*. The most serious damage is to tomatoes grown for canning. Other nematodes recorded are *Tylenchulus semi-penetrans* on orange, *Anguina tritici* on wheat, and *Aphelenchus avenae*, *Cephalobus persegnis* and *Chiloplacus* sp. M.T.F.

457—Technical Bulletin. Ministry of Agriculture, Fisheries and Food. London.

a. THOMAS, I. & JANSON, H. W., 1957.—" Common names of British insect and other pests." No. 6, iii+49 pp.

(457a) This compilation includes a separate list of 18 scientific and 16 common names of eelworms found in Britain. R.T.L.

458—Tijdschrift over Plantenziekten.

a. OOSTENBRINK, M., s'JACOB, J. J. & KUIPER, K., 1957.—" Over de waardplanten van *Pratylenchus penetrans*." **63** (6), 345–360. [English summary pp. 352–353.]

b. LAAN, P. A. VAN DER & HUIJSMAN, C. A., 1957.—" Een waarneming over het voorkomen van fysiologische rassen van het aardappelcystenaaltje, welke zich sterk kunnen vermeerderen in resistente nakomelingen van *Solanum tuberosum* subsp. *andigena*." **63** (6), 365–368. [English summary pp. 367–368.]

(458a) 164 cultivated species and varieties of plants were compared for their behaviour when exposed to attack by *Pratylenchus penetrans* that had caused damage in nursery stock or potatoes. The results are shown in tabular form and commented on in the text. D-D mixture eased symptoms of crop sickness apparently caused by *P. penetrans*. All the crops grown were shown to be hosts but they differed considerably in the symptoms of injury shown, some showing none. The root population density varied between 23 and 106,000 per 10 gm. of roots. Eelworm population seems to show some correlation with root mass. J.B.G.

(458b) Crosses of susceptible cultivated varieties of *Solanum tuberosum* with resistant lines of *S. tuberosum* subsp. *andigena* were hitherto regarded as resistant to potato-root eelworm, *Heterodera rostochiensis*, in Holland [for abstracts see Helm. Abs. **22,** No. 535a and **25,** No. 117c]. The crosses have now been found highly susceptible to attack by potato-root eelworm from Peruvian sources. R.D.W.

459—Transactions of the British Mycological Society.

a. DUDDINGTON, C. L., 1957.—" Predacious fungi and the biological control of nematodes." **40,** 165.

(459a) Predacious fungi were first used to attempt to control eelworms by Linford in Hawaii. During the last war experiments were carried out to control human and animal helminths by predacious fungi. During the last five years experiments have attempted to control *Heterodera* spp. by these fungi. J.B.G.

460—Trudi Instituta Zoologii. Akademiya Nauk Kazakhskoi SSR.

a. AGAPOVA, A. I., 1957.—[Results of the study of fish parasites in waters of Kazakhstan.] **7,** 121–130. [In Russian.]

b. SIDOROV, E. G., 1957.—[Fish parasite fauna of the Kurgaldzhin Lake.] **7,** 131–140. [In Russian.]

c. MAKSIMOVA, A. P., 1957.—[Parasite fauna of *Leuciscus idus* in waters of Central Kazakhstan.] **7,** 141–150. [In Russian.]

d. BOEV, S. N., LAVROV, L. I., ZAKHRYALOV, Y. N. & MAKSIMOVA, A. P., 1957.—[Studies on the helminth fauna of wild ruminants of western Tien Shan.] **7,** 151–155. [In Russian.]

e. GVOZDEV, E. V., 1957.—[Helminth fauna of wild and domestic gallinaceous birds of the Aksu-Dzhebaglin Preserve (western Tien Shan).] **7,** 156–165. [In Russian.]

f. GVOZDEV, E. V., 1957.—[The parasite fauna of the bearded grouse (*Perdix daurica* Pall.).] **7,** 166–169. [In Russian.]

g. PANIN, V. Y., 1957.—[Variability of the morphological characters and its significance in the systematics of the trematodes of the genus *Prosthogonimus* Lühe, 1909.] **7,** 170–215. [In Russian.]

h. PANIN, V. Y., 1957.—[The distribution of trematodes of the genus *Prosthogonimus* among wild birds and the natural foci of prosthogonimiasis.] **7,** 216–226. [In Russian.]

i. VSEVOLODOV, B. P., 1957.—[The pathological morphology of prosthogonimiasis in chickens.] **7,** 227–236. [In Russian.]

j. BONDAREVA, V. I. & ZVEREV, M. D., 1957.—[Experimental infection of foxes and jackals with *Multiceps multiceps*.] **7,** 237–240. [In Russian.]
k. AGAPOVA, A. I. & ISMAGILOV, M. I., 1957.—[The parasites of *Spermophilopsis leptodactylus*.] **7,** 291–293. [In Russian.]

(460a) Agapova summarizes literature of the last 20 to 25 years on the fish parasites in Kazakhstan and discusses the influence of the parasite fauna on the restocking and acclimatization of fish, particularly of carp, bream and smaller sturgeon. In an experiment to treat the sturgeons, which were all infected with *Contracaecum bidentatum*, each of 21 fish was given a tablet of 0·04 gm. santonin and 0·25 gm. sugar, coated with animal fat. The tablets were introduced into the gullet by means of forceps and were readily swallowed by the fish. Worms were passed between ten hours and two days after treatment. Some of the fish autopsied on the second day still contained single worms but all except two were freed from *C. bidentatum* by a second tablet given on the third day. G.I.P.

(460b) The parasites found in 140 fish, belonging to seven species, from Lake Kurgal-Dzhino included eleven species of Monogenea, ten of Digenea, four of Cestoda and two of Nematoda. *Diplostomulum spathaceum* and *D. clavatum* parasitized all the seven species of fish. The *Dactylogyrus inexpectatus*, found on *Carassius carassius* and *C. auratus gibelio*, varied from those described in the literature in the measurements of the opisthaptor and the copulatory organ. Short notes on the incidence and intensity of each parasite are given for each host. G.I.P.

(460c) In the Nura basin 59 out of 61 *Leuciscus idus* were found infected with eight trematode, two cestode and two nematode species. The average number of species in any one host was three. Of 52 *L. idus* in the Sary-Su basin, all were infected with six trematode, one acanthocephalan, one leech and three crustacean species. The average number of species per host was 2·2. These results are compared with those obtained by Sidorov (1956) for 120 *L. idus* from the Irgiz-Turgay basin, where the parasites were most frequent and varied, with an average number of four species per host. The frequencies and intensities of the infections are tabulated for each of these three areas of central Kazakhstan. G.I.P.

(460d) Of the 28 species parasitizing wild ruminants in the Aksu-Dzhebaglin Preserve in Talass Ala-Tau, four were found in roe-deer, 18 in Siberian goats and 25 in Siberian wild sheep [*Ovis ammon*]. Except for *Skrjabinema ovis*, the infections were low, due to the dry climate and poor molluscan fauna. Recorded for the first time are *Nematodirus oiratianus* for the roe-deer, *S. ovis*, *Marshallagia* n.sp. [not named or described], *M. mongolica*, *N. abnormalis*, *N. spathiger* and *Protostrongylus raillieti* for the Siberian goat and *N. abnormalis*, *Ostertagia trifurcata*, *Marshallagia* n.sp. and *Agamospirura* sp. for the Siberian wild sheep. G.I.P.

(460e) Twenty-five species of helminths are recorded from four species of gallinaceous birds from the Aksu-Dzhebaglin Preserve in Talass Ala-Tau and the percentage infections tabulated separately for *Alectoris graeca*, *Perdix perdix*, *Coturnix coturnix* and domestic fowls. *A. graeca* is a new host for *Brachylecithum coturnixi*, and *P. perdix* for *B. coturnixi*, *Postharmostomum gallinum*, *Tamerlania zarudnyi*, *Choanotaenia infundibulum*, *Tetrameres timopheevoi* and *Oxyspirura schulzi*. In the Talass Ala-Tau wild gallinaceous birds are not important as reservoirs of chicken infections except perhaps *Coturnix coturnix* for *Hymenolepis cantaniana* and *Choanotaenia infundibulum*. G.I.P.

(460f) Of the 42 *Perdix daurica* examined during 1948–55 in south-eastern Kazakhstan 35 were infected with helminths. The incidence and intensity of each infection and the localities where they occurred are tabulated for the two trematode, four cestode, eight nematode and one acanthocephalan species found. G.I.P.

(460g) Panin has studied the variability of the morphological characters of *Prosthogonimus* in 1,800 specimens of *P. ovatus*, *P. cuneatus* and *P. anatinus* from wild and domestic birds and concludes that the characters which may be used for the differentiation of its species are

the degree of development of the uterus, the relative position of the ovary to the ventral sucker and of the uterus to the intestinal branches and ventral sucker, the level of the posterior edge of the vitellaria, and the position of the testes and ventral sucker in relation to the mid-line of the body. Revising the genus accordingly, he acknowledges three subgenera and seven species, (i) *Prosthogonimus* containing *P. ovatus* and *P. dogieli*, (ii) *Macrogenotrema* containing *P. cuneatus*, *P. vitellatus*, *P. macrorchis* and *P. longus-morbificans* and (iii) *Mediogenotrema* containing *P. anatinus*. He discards the three subgenera *Primagenotrema*, *Prosthogenotrema* and *Polytogenotrema*, erected by Skryabin in 1941, and six of the 32 species originally in *Prosthogonimus*, viz., *P. limani*, *P. gracilis*, *P. buckarti*, *P. dujardini*, *P. neveulemairei* and *P. pricei*, mentioned but not described in the literature. The remaining 19 species have lost their independence, viz., *P. skrjabini*, *P. rudolphii*, *P. horiuschii*, *P. orientalis*, *P. querquedulae* and *P. karausiaki* (which have become synonyms of *P. anatinus*), and *P. pellucidus*, *P. japonicus*, *P. putschkowskii*, *P. brauni*, *P. furcifer*, *P. fuelleborni*, *P. leei*, *P. folliculus*, *P. sinensis*, *P. penni*, *P. pseudopellucidus*, *P. macroacetabulus* and *P. indicus* (which have become synonyms of *P. cuneatus*). Descriptions and differential diagnoses are given for all the revised subdivisions of *Prosthogonimus*. G.I.P.

(460h) Panin discusses host specificity in the various species of *Prosthogonimus* and the focal occurrence of this genus. Studying the natural focus at Lake Zaysan, he found infection in 31·9% of young and 5·83% of adult wild birds and 5·5% of young and 32·4% of adult domestic fowls. Of the three species found, *P. cuneatus* caused 47·2% of the total infections and was more frequent in terrestrial than in aquatic birds; *P. ovatus*, contributing 36·6% of the infections, was predominantly found in terrestrial birds; and *P. anatinus*, contributing 26·1% was found only in young aquatic birds. The area of the focus was determined by the area of activity of the second intermediaries, dragon-flies. Panin found these dragon-flies up to 50 km. from the lake where birds were still infected although to a lesser degree than near the lake. G.I.P.

(460i) The pathological changes caused by heavy infections of *Prosthogonimus cuneatus* in the oviducts of chickens are described and figured. Contrary to accepted opinion, mechanical disturbances occur only on the small area of the wall directly under the sucker, while the pathological changes observed are due to the toxic effect of the worms. These changes are greatest in the anterior portion of the oviduct and are expressed in the formation of oedema in the interstices of the villi, the appearance of considerable and varied cell infiltrates, a reduced number of glands and cessation of protein secretion. Inflammatory changes affect all the layers of the oviduct wall and the mesentery. The infection may be followed by the formation of protein concretions, atrophy and, possibly, breaking of the wall. In the last case peritonitis develops, followed by death of the birds. G.I.P.

(460j) Experimental infection with *Multiceps multiceps* cysts was successful in two out of three young jackals (*Canis aureus*) and in the weakest of four young foxes (*Vulpes vulpes*). One badger remained uninfected. Dog pups were used as controls. In jackals 7% to 27% of the cysts developed, in the fox only 3% and in pups 40% to 100%. It is concluded that jackals are potential hosts and may spread *M. multiceps* to farm animals but that foxes are insignificant as carriers. G.I.P.

(460k) Of 36 rodents, *Spermophilopsis leptodactylus*, examined in Kazakhstan 18 were infected with *Dermatopallarya baylisi*, eight with *Physaloptera leiperi*, two with females of *Physaloptera* sp. and four with *Moniliformis moniliformis* which is reported for the first time in this host. G.I.P.

461—Tuinbouwberichten.

a. BRANDE, J. VAN DEN & GILLARD, A., 1957.—"Bestrijding van wortelknobbelaaltjes (*Meloidogyne* spp.) door elektrische bodemverwarming." **21** (4), 63–64.

(461a) Brande & Gillard describe their technique for controlling root-knot nematode in glass-houses by electrical heating of the soil. Using chicken wire, placed at varying depths in the soil, as a resistor a current of 16–20 volts is applied and the treated plot is covered with

plastic sheets and sacking to retain the heat. Consumption of electricity is about 300 watts per hour per square metre of soil. In one experiment wire at a depth of 29 cm. gave a temperature of 48° C. in the top layer of soil (A); at 17 cm. 55° C. (B); and at 10 cm. 56° C. (C). After treatment the number of eelworms per 200 c.c. soil was: A, 13; B and C, nil. The control plot yielded 3,030 eelworms per 200 c.c. A second series of experiments showed that the most economic method is to place wire at two different depths in the same plot: in this way a temperature of 61·5 C. was reached. Eelworm counts in these tests are not recorded. The authors conclude that their method is cheaper than steam sterilization and is effective for controlling root-knot as well as wireworms and millipedes. A.E.F.

462—Türk Veteriner Hekimleri Derneği Dergisi.

a. KURTPINAR, H., 1957.—" Erzurum, Kars ve Ağrı vilâyetleri sığır, koyun ve keçilerin yaz aylarina mahsus parazitleri ve bunların doğurdukları hastalıklar." **27** (124/125), 3320–3325. [English summary p. 3325.]

b. ORAL, M., 1957.—" Memleketimizde et muayeneleri yönünden önemli hastalıkların yayılış durumu." [Tuberculosis and *Cysticercus bovis* in cattle in Turkey.] **27** (126/127), 3432–3438. [English summary p. 3438.]

(462a) The commonest helminths present during the summer in 548 cattle, and 834 sheep and goats from the provinces of Erzurum, Kars and Agrı in Turkey were *Fasciola hepatica*, *Dicrocoelium dendriticum* and hydatid in cattle and sheep, and *Haemonchus contortus* in sheep and goats. M.McK.

463—Ugeskrift for Laeger.

a. SVANE-KNUDSEN, P., 1957.—" Mepacrinbehandling af taeniasis." **119** (22), 694–695.

(463a) Svane-Knudsen has treated 21 patients for Taenia infection with mepacrine (a single dose of 0·8 gm. which was repeated in six cases). There were side effects of a dyspeptic nature in six cases and yellowing of the skin in two. Fifteen of the patients were cured (i.e., a scolex was recovered). The author considers mepacrine to be serviceable in the treatment of taeniasis but not ideal. A.E.F.

464—Union Médicale du Canada.

a. PRUD'HOMME, J., GÉLINAS-MACKAY, C. & QUENNEVILLE, G., 1957.—" Trichinose aiguë." **86** (4), 388–393.

b. BORDELEAU, J. M. & MARIN, C. E., 1957.—" Hémiplégie causée par la *Trichinella spiralis*." **86** (5), 523–526.

(464a) The authors describe a fatal case of trichinelliasis in a 24-year-old woman in Montreal. S.W.

465—United States Armed Forces Medical Journal.

a. BRUTON, O. C. & JAFFURS, W. J., 1957.—" Larval granulomatosis. Diagnosis by needle biopsy of the liver." **8** (7), 1022–1026.

b. HAUBRICH, W. S. & WELLS, R. M., 1957.—" Observations on infestation by *Schistosoma mansoni* in Puerto Rican troops." **8** (8), 1093–1101.

(465a) A needle biopsy of the liver was performed on a boy two years of age in whom the liver and spleen were enlarged and who had a 65% eosinophilia and a history of eating dirt. Complete sectioning of the sample revealed several *Toxocara canis* larvae. The patient had acute respiratory symptoms which subsided after treatment with penicillin and streptomycin. It is suggested that liver needle biopsy is a safe method of proving the diagnosis of visceral larva migrans. M.McK.

(465b) Fifteen of 43 Puerto Rican soldiers stationed in the continental United States had *Schistosoma mansoni* infection as indicated by eggs in the stools or granulomata in the

liver or rectal mucosa. Apart from multiple granulomatous polyps in the rectosigmoidal mucosa coexisting with a rectal adenocarcinoma in one youth, the infections were asymptomatic.

M.MCK.

466—Urologiya. Moscow.

a. KHRUSHCHEV, V. I., 1957.—[Bilharziasis (schistosomiasis) of the spermatic cord.] **22** (2), 53–56. [In Russian.]
b. YAKHIN, B. S., 1957.—[A case of echinococcosis of the kidney.] **22** (2), 59–60. [In Russian.]
c. NIKITIN, Y. V., 1957.—[Echinococcosis and coral-shaped stone in the kidney.] **22** (3), 52–53. [In Russian.]

467—Vestnik Khirurgii Imeni Grekova.

a. PANCHENKOV, R. T. & KHASPEKOV, G. E., 1957.—[Echinococcosis of the heart.] **78** (1), 101–102. [In Russian.]
b. ASTROZHNIKOV, Y. V., 1957.—[Diagnosis of rare localizations of echinococcosis.] **78** (6), 86–90. [In Russian.]
c. ALPEROVICH, B. I., 1957.—[One-stage operation for alveolar echinococcosis of right and left liver lobes.] **78** (8), 118. [In Russian.]
d. POSTRIGAN, P. A., 1957.—[Acute gall-bladder empyema caused by *Ascaris lumbricoides*.] **78** (8), 123–124. [In Russian.]

468—Veterinariya.

a. ULYANOV, S. D., 1957.—[Treatment of sheep for *Avitellina* and *Thysaniezia* infections.] **34** (5), 32–35. [In Russian.]
b. GOLUBEV, N. F., 1957.—[Experimental treatment of sheep for helminthiasis on collective farms in the Leningrad region.] **34** (5), 36–40. [In Russian.]
c. GARKAVI, B. L., 1957.—[Cadmium oxide in the treatment of pigs for ascariasis.] [Abstract.] **34** (5), 41. [In Russian.]
d. SHCHERBAKOV, E. V., 1957.—[The treatment of sheep and goats for muelleriasis.] [Abstract.] **34** (5), 41. [In Russian.]
e. UMOV, A. A., 1957.—[Experimental use of Ditrazin in dictyocauliasis of sheep.] [Abstract.] **34** (5), 41. [In Russian.]
f. FILIMONOV, M. N. & IVANOVA, M. V., 1957.—[Sodium arsenite as an effective anthelmintic in the treatment of parascariasis and oxyuriasis of horses.] [Abstract.] **34** (5), 41. [In Russian.]
g. BUTORIN, F. S., 1957.—[The substitution of potassium iodide by sodium iodide.] [Abstract.] **34** (5), 41–42. [In Russian.]
h. ROZHKOV, Y. G., 1957.—[The use of the needle from a pulp extractor in the removal of coenurus cysts.] [Abstract.] **34** (5), 42. [In Russian.]
i. GADZHIEV, G. M., 1957.—[Treatment of dictyocauliasis in sheep by intratracheal injections of a naphthalene and turpentine mixture.] [Abstract.] **34** (5), 42. [In Russian.]
j. ULYANOV, P. V., 1957.—[The influence of meteorological factors on the epizootiology of fascioliasis.] [Abstract.] **34** (5), 42. [In Russian.]
k. ULYANOV, P. V. & CHISTYAKOV, F. A., 1957.—[The transport of helminthological material for faecal examination.] [Abstract.] **34** (5), 42–43. [In Russian.]
l. KONONOV, A. I., 1957.—[The pathogenicity of strongyloid infections to piglets.] [Abstract.] **34** (5), 43. [In Russian.]
m. STRASHNI, P. P., 1957.—[Acute larval fascioliasis of sheep.] [Abstract.] **34** (5), 43. [In Russian.]
n. LITOVKA, G. P., 1957.—[Prophylactic measures against dictyocauliasis and fascioliasis in cattle.] [Abstract.] **34** (5), 43. [In Russian.]
o. ORLOV, I. V., NALETOV, N. A., TETERNIK, D. M., RIBALTOVSKI, O. V. & KASYANENKO, I. I., 1957.—[Differentiation of Trichinella from other similar infections of the muscles of pigs.] **34** (5), 67–71. [In Russian.]
p. MITROFANOV, V. M., 1957.—[The distribution of cysticerci among cattle in Kirgizia.] **34** (5), 72–74. [In Russian.]

(468a) Four anthelmintics were tested against *Avitellina* and *Thysaniezia* infections in 93 sheep. The treatment was preceded by 2·0 ml. to 2·5 ml. of a 10% copper sulphate solution and, except in the case of aminoacridine, was followed after three to six hours by 65 gm. to 80 gm. of Glauber's salt. All the substances were intubated orally. Aminoacridine in doses

of 0·1 gm. and 0·15 gm. per kg. body-weight gave an extenseefficacy of 60% to 71% and intensefficacy of 74% to 83% against *Avitellina* and 73% to 75% and 85% to 88% respectively against *Thysaniezia*. The 0·15 gm. dose produced toxic effects lasting up to ten days. Tin arsenite in doses of 0·7 gm. to 1·0 gm. per sheep was 66% efficient against *Avitellina* and 81% against *Thysaniezia* and produced no side effects. The tin compound and the 0·1 gm. dose of aminoacridine are recommended for the treatment. Kamala and Acrichin were ineffective. G.I.P.

(468b) After a preliminary determination of the helminth infections on three sheep farms in the Leningrad region, treatment and improved feeding and maintenance of sheep and any goats and cattle present were organized for two years. Dosing twice yearly with carbon tetrachloride and changes in pasture every two-and-a-half months eradicated fascioliasis from two farms and reduced it from 70% to 1·6% on the third. Free feeding of small doses of phenothiazine-salt mixtures throughout the year cured dictyocauliasis and markedly reduced strongylid infections. *Moniezia* infections of lambs were cured by treatment of the larval stages in May and again in June. G.I.P.

(468c) Noting the efficacy ascribed, in literature other than Russian, to cadmium oxide in the treatment of ascariasis in pigs, Garkavi used 0·5 gm. of the oxide per animal for each of ten piglets (average body-weight 10 kg.) and 0·75 gm. per animal for 118 piglets (average body-weight 15–18 kg.). The dose was distributed over three days and was well mixed with the food to prevent vomiting. 96% of the pigs were cured. G.I.P.

(468d) Sheep and goats with muelleriasis were effectively treated by the intratracheal intubation of 5% sodium salicylate solution into the right lung and, after an interval of one day, into the left. The animals were kept on their backs during intubation. The dosage for sheep two to six months old was 10 ml., for six to twelve months old, 15 ml., and over one year old, 20 ml. In recent years sodium salicylate in doses of 2 gm. to 4 gm. of the dry substance per sheep has been given subcutaneously with good results to 15,000 sheep before they were transferred to enclosed quarters. G.I.P.

(468e) Sheep with dictyocauliasis were treated by two subcutaneous injections (with an interval of one day) of 0·1 gm. Ditrazin (dry weight) per kg. body-weight in a 1:3 aqueous solution. Its efficacy, determined a month later, was 78·7%. G.I.P.

(468f) Sodium arsenite was highly efficient against parascariasis in 72 horses and oxyuriasis in ten horses and is recommended in doses of 0·5 gm. to 1·0 gm. for those six to twelve months old, 1·0 gm. to 1·5 gm. for those one to two years old, 1·5 gm. to 2·0 gm. for those two to three years old, 2·0 gm. to 2·5 gm. for those three to four years old and 2·5 gm. to 3·0 gm. for older ones. Given in food after 10 to 12 hours' starvation, the dose is repeated after one day; heavy infections require three doses. The anthelmintic should not be used in cases of heart disease. G.I.P.

(468g) Butorin found that sodium iodide could be successfully substituted for potassium iodide in the preparation of an iodine solution and that 0·5 ml. per kg. body-weight of a 1:1,000 concentration of the aqueous iodine solution was highly effective against dictyocauliasis in sheep. G.I.P.

(468i) Groups of 100 or 150 sheep were used in comparative experiments on the treatment of dictyocauliasis. The efficacy obtained with pure naphthalene was 74·7%; with 10% and 15% naphthalene & turpentine mixtures the efficacy was 96% when single doses of 0·2 gm. per kg. body-weight were injected into the trachea of sheep in a strictly dorsal position. Two intubations of an iodine solution at prescribed doses to sheep were only 67·3% efficient. G.I.P.

(468 o) The authors compare the localization, structure and measurements of *Trichinella spiralis* cysts in the muscles of pigs with those of the cysts of *Sarcosporidium* and *Taenia solium*. G.I.P.

(468p) Cysticercus infection of cattle in Kirgizia, judged from the examination of 9,576 carcasses and from meat station records of 78,364 carcasses, varied between 2% and 3·2% for the various town areas. Mitrofanov describes three cases of unusual localization of the cysticerci and concludes that they develop not only in the musculature but also in the connective and interstitial tissues of organs. They can be found simultaneously in the masseter muscles, heart and other organs, or only in the heart and liver, and it is possible that they may occur only in one or more of the internal organs. Therefore the examination of slaughtered cattle for cysticerciasis should include all the organs. G.I.P.

469—Veterinarski Arhiv.

a. EHRLICH, I., LUI, A. & WINTERHALTER, M., 1957.—" Djelovanje heksakloretana na liječena goveda, metilje i njihova jaja." **27** (11/12), 392–414. [English & German summaries pp. 412–414.]

(469a) Thirty-nine cattle with fascioliasis received, on two successive mornings, a capsule of hexachlorethane (containing 21 gm. with 7 gm. of talcum and 0·18 gm. of kaolin) per 60 kg. body-weight. Three of the cattle were autopsied on each day of the twelve days after treatment. The treatment was successful and remarkably non-toxic in all those cattle which were otherwise healthy, but did not cure eight with chronic alimentary disturbances and 13 with obstructed bile-ducts and chronic lesions of the liver. Eggs disappeared from the faeces of the cured cattle after one to five days. Following the treatment acute diffuse nephrosis was observed in the kidneys and slight degenerative changes in the liver parenchyma while the milk acquired a disagreeable smell, but on the eighth day the cattle had returned to normal. Hexachlorethane killed the adult flukes and greatly reduced the viability of the eggs and miracidia but did not affect young worms. G.I.P.

470—Veterinarski Glasnik. Belgrade.

a. DELAK, M. & WINTERHALTER, M., 1957.—" O suzbijanju i liječenju fascioloze domaćih životinja supkutanom aplikacijom tetraklormetana (carbonei tetrachloridum)." **11** (1), 27–33.
b. VUČKOVIĆ, K., 1957.—" Nalaz trihinela kod svinja klanih na području Beograda." **11** (2), 198–201. [English summary p. 201.]
c. DURDEVIĆ, D., 1957.—" Prsnuće srčanog mišića svinje prouzrokovano cistama Taeniae echinococcus." **11** (3), 372–375. [French summary p. 375.]
d. ANIĆ, N. I., 1957.—" Rezultati supkutane aplikacije 'protumetilja' kod ovaca." **11** (3), 381–385.
e. BULJEVIĆ, S. M., 1957.—" Prilog poznavanju raširenosti plućne strongiloze svinja na teritoriji sreza Pančevačkog." **11** (3), 388–392. [French summary p. 392.]
f. DIVLJANOVIĆ, D. K., 1957.—" Prilog proučavanju rasprostranjenosti distomatoze, ehinokokoze i cisticerkus tenuikolis kod svinja zaklanih na gradskoj klanici u Valjevu." **11** (3), 392–393.
g. MIKAČIĆ, D., 1957.—" Poznavanje slatkovodnih puževa potrebno za helmintološki rad veterinara." **11** (4), 433–441.
h. WINTERHALTER, M. & STUPARIĆ, D., 1957.—" Ikričavost goveda." **11** (4), 458–465. [German summary p. 465.]
i. NEVENIĆ, V., 1957.—" Povodom zaključaka o ehinokokozi plenuma sekcije za parazitologiju i invazione bolesti Društva Veterinara FNRJ, održanog 23 i 24 Novembra 1956 godine." **11** (4), 475–477.
j. STUDIĆ, D. S., 1957.—" Trihinoza kao zoonoza." **11** (5), 537–543.
k. TODOROVIĆ, R., 1957.—" Opturacija jajovoda krave sa *Setaria labiato-papillosa* (Alessandrini 1838 godine)." **11** (5), 557–558.
l. STUDIĆ, D. S., 1957.—" Echinococcosis (hydatidosis) kao zoonoza." **11** (6), 608–612.
m. BOKO, F. & BELJIN, V., 1957.—" Himenolepidide kod bijelih laboratorijskih miševa." **11** (7), 680–683. [German summary p. 683.]
n. NEVENIĆ, V., 1957.—" Metiljavost i njeno suzbijanje." **11** (7), 687–695.
o. STANIVUKOVIĆ, M., 1957.—" Doprinos lečenju fascioloze ovaca subkutanom aplikacijom carbonei tetrachloridum." **11** (8), 826–828.
p. ZUKOVIĆ, M., 1957.—" Parasitske invazije konja zapadnog dijela Srednje Posavine." **11** (9), 940–944. [English summary p. 944.]

q. JOCKOVIĆ, M., MARINKOVIĆ, D. & ŠAPINAC, M., 1957.—" Dehelmintizacija pasa na području no sreza Beograd." **11** (10), 1031–1034.
r. NONIN, S., 1957.—[Arecoline treatment of dogs.] **11** (11), 1078–1083. [In Serbian.]
s. VUJIĆ, B., 1957.—" Suzbijanje epizootije distomatoze u jednom selu Ibarske Doline." **11** (11), 1098–1101.

(470a) On the basis of an extensive survey of the literature and on their own work, the authors conclude that the subcutaneous injection of carbon tetrachloride mixed with liquid paraffin is safe and gives good results against *Fasciola* in sheep and goats. The recommended dose is 4–5 c.c. of carbon tetrachloride and liquid paraffin as 3:1. The results of this treatment were not satisfactory in cattle, but it may be used in pigs in doses of 1 c.c. per pig of 5–10 kg. body-weight up to a maximum of 6 c.c. for those over 80 kg. in weight. C.R.

(470b) Vučković found trichinosis in seven out of 159,426 pigs examined in the Belgrade district during the years 1951–55. C.R.

(470c) Durdević describes a case of rupture of the heart muscle in a pig by a hydatid cyst. C.R.

(470d) In Anić's view fascioliasis is very widely distributed and a survey at the abattoir of Sapec showed practically 100% of the animals to be affected. In 1955 he found 265 (31%) of 885 cattle less than three years old to be infected and 1,934 (93%) of 2,058 over three years old: in 1956, 311 (31%) of 972 less than three years old and 2,860 (94%) of 3,011 over three years old were infected. Out of 2,511 sheep 2,319 (92%) were infected in 1955 and out of 1,184 sheep 1,038 (87%) were infected in 1956. Treatment of a flock of sheep with 5 c.c. of Protumetilja [a mixture of carbon tetrachloride and liquid paraffin] given subcutaneously gave good results against *Fasciola* and was without side effects. C.R.

(470e) In a survey of lungworm infection in pigs in 1955–56, Buljević found that in the Pančevo district 1,014 (29·16%) out of 1,610 pigs were infected with *Metastrongylus elongatus*, 23·61% with *M. pudendotectus* and 47·22% with both species. C.R.

(470f) In pigs slaughtered at Valjevo, *Fasciola*, hydatids and *Cysticercus tenuicollis* were recorded. The losses produced by the condemnation of the offal are estimated at 42,000 dinars. C.R.

(470g) Mikačić outlines the morphology and oecology of the fresh-water snails which serve as intermediate hosts for various flukes in Yugoslavia. He describes the methods of collecting snails and their dissection for the larval stages. C.R.

(470h) The authors deal with the distribution of bovine cysticerciasis in Yugoslavia. In areas where hygienic conditions are poor the animals are infested with cysticerci and the people with Taenia. Losses from cysticerciasis are of economic importance. C.R.

(470i) The parasitology section of the Yugoslav veterinary association devoted the conclusion of its meeting to the control of hydatid. To be successful, action should be widespread and all those dealing with animals should co-operate. The usual methods of control are outlined. C.R.

(470j) This is a general article on trichinosis in pig and man. As a preventive measure Studić recommends trichinoscopy and stresses the importance of garbage in spreading trichinosis. C.R.

(470k) The occlusion of the oviduct of a cow by *Setaria labiatopapillosa* is reported in this article as a cause of sterility. C.R.

(470l) In this general article on echinococcosis, Studić deals with hydatid in animals and man, with aspects of its epizootiology and epidemiology, and with its control and prevention. Control, to be successful, should in his opinion be co-ordinated centrally and include propaganda. Slaughtering regulations must be adhered to rigorously and dogs must be treated against *Echinococcus granulosus* free of charge. C.R.

(470m) The authors found that *Hymenolepis nana* produced not only clinical symptoms in laboratory mice but was also the cause of mortality. Treatment with seeds of *Cucurbita pepo*, which are readily eaten by the mice gave good results against this tapeworm. C.R.

(470n) [This is an essay on the general aspects of fascioliasis.]

(470o) Stanivuković used carbon tetrachloride mixed with liquid paraffin (3:1) in doses of 3–4 c.c., and even 5 c.c., subcutaneously against *Fasciola hepatica* in sheep and obtained good results. C.R.

(470p) In the western part of Central Posavina 100% of the horses and 96·98% of the foals are infected with strongyles. *Parascaris equorum* occurs in 40·78% of horses and 60·84% of foals, and *Fasciola hepatica* in 20·08% of horses and 7·22% of foals. There is little possibility of improving the pasture and stable hygiene and Zuković recommends a wider use of anthelmintics. C.R.

(470q) The authors used a 1% solution of arecoline hydrobromide for the treatment of tapeworm infections in dogs. The recommended dose rate was 1 c.c. for those weighing 5 kg., 2 c.c. for those weighing 10 kg. and 3 c.c. for those weighing 15 kg. They obtained good results. An ingenious clamp for holding dogs during treatment is illustrated. C.R.

(470r) [This is a report of the use of arecoline hydrobromide for the treatment of tapeworm infestations in dogs.]

(470s) Vujić reports the results of control of an outbreak of fascioliasis in the village of Brvenica in the Ibar valley. Treatment with capsules of carbon tetrachloride was effective in both chronic and acute fascioliasis. C.R.

471—Veterinary Medicine.

a. CAUTHEN, G. E. & LANDRAM, J. F., 1957.—" Phenothiazine-mineral mixes for cattle." **52** (12), 587–588.
b. WHITNEY, L. F., 1957.—" Concerning the safety of n-butyl chloride as a whipworm anthelmintic." **52** (12), 606.

(471a) A free-choice mixture containing about 2% phenothiazine and 40–50% mineral offered to adult cattle with cotton-seed meal, ground sorghum, grain and molasses was not consumed in sufficient amounts daily by adult cattle to give effective control of gastro-intestinal parasites. R.T.L.

(471b) N-butyl chloride is an efficient anthelmintic against whipworms in dogs but the effective dosage is so nauseating that its use was practically precluded. But when, after a 24-hour fast, five doses of 1 c.c. per 10–12 lb. body-weight were given at hourly intervals no ill effects followed. Roundworms and hookworms as well as the whipworms were eliminated. R.T.L.

472—Veterinary Record.

a. MICHEL, J. F., 1957.—" Further experiments on the epidemiology of parasitic bronchitis in calves." **69** (49), 1118–1121.
b. SOULSBY, E. J. L., 1957.—" Some immunological phenomena in parasitic infections." **69** (49, Pt. 2), 1129–1136. [Discussion pp. 1136–1139.]
c. STEVENS, A. J., 1957.—" Respiratory diseases of sheep." **69** (49, Pt. 2), 1249–1254. [Discussion pp. 1254–1257.]
d. JARRETT, W. F. H., McINTYRE, W. I. M., JENNINGS, F. W. & MULLIGAN, W., 1957.—" The natural history of parasitic bronchitis with notes on prophylaxis and treatment." **69** (49, Pt. 2), 1329–1336. [Discussion pp. 1336–1340.]
e. WHITTLESTONE, P., 1957.—" Some respiratory diseases of pigs." **69** (49, Pt. 2), 1354–1363. [Discussion pp. 1363–1366.]

(472a) Michel relates experiments in which two calves were placed in each of three clean grass paddocks and were infected in various ways and at different times with *Dictyocaulus viviparus* larvae. The results indicated that "infection of lungworms acquired by a grazing calf

depends on the herbage infestation during a short initial period only if changes in the rate of uptake of larvae from the pasture are continuous" and that "in situations where abrupt changes can occur a calf may suffer disease as a result of infecting larvae which it itself has passed on to the pasture". He deduces from his observations that (i) it is far safer to put all the year's calves on to a pasture at the same time rather than in batches as they reach an age at which they are considered strong enough to resist lungworm infections, (ii) it is impossible to deduce that a pasture is safe from the circumstance that animals have grazed on it without harm, (iii) resistance to infection depends on the rate of uptake of larvae and not on the size of the infection it has carried and (iv) it is impossible to deduce from the severity of symptoms whether the animal is or is not resistant. From these experiments he concludes that an infected animal can only produce herbage infestations dangerous to itself if it is withheld from infection for a time and that perhaps the only safe course would be to ensure that calves be first exposed to a low level of herbage infestation and then continue to have constant access to that infected herbage. R.T.L.

(472b) In this comprehensive review of our present knowledge of immunological phenomena in parasitic infections, Soulsby deals firstly with the mechanisms of natural immunity and secondly, and in greater detail, with acquired immunity, particularly with the effect of immunity on the parasite. This may result in the host becoming completely refractory to reinfection, in the elimination of the existing infection, in complete or partial inhibition of development or inhibition of reproduction. He discusses, giving examples, the phenomena of self cure and protection, the mechanism of self cure, retardation of development, inhibition of reproduction, the anti-enzyme basis of immunity, immunization procedures and the adaptation of parasites to their hosts. A number of unusual reactions, for which no satisfactory explanations have yet been found, are described. During infection antibodies are demonstrable against the body tissues of the parasite but in nematode infections these frequently lack protective properties. The antagonistic action appears more commonly to be directed against substances produced by the living parasites and some success has been reported in producing immunity artificially by administration of these metabolic products. S.W.

(472c) Of the three specific types of pneumonia in sheep in Great Britain, viz., enzootic pneumonia, jaagsiekte and parasitic broncho-pneumonia, the last named, although wide-spread, is not often clinically serious and large numbers of lungworms are seldom found post mortem. Heavy infestation with *Dictyocaulus filaria* may cause parasitic bronchitis usually in weaned lambs on lowland pastures in late autumn and is often associated with gastro-enteritis of parasitic origin. Sheep can be heavily infected with *Muellerius capillaris* without any clinical symptoms although much of the lung tissue may be involved. [The subsequent discussion centred entirely on the other two types of pneumonia.] R.T.L.

(472d) The pathological reactions of bovines to infection with *Dictyocaulus viviparus* have been studied experimentally. The lesions produced are described and illustrated by photomicrographs (from the *Journal of Pathology and Bacteriology*) and are correlated with the clinical symptoms. The development of the disease is considered under (i) penetration of the bowel and migration to the mesenteric nodules, (ii) the alveolar-bronchial phase, (iii) the patent phase and (iv) the late patent and post-patent phase. It is shown that in the west of Scotland lungworm larvae can survive the winter on pasture and that the yearling carrier is a major factor in the spread of the infection. That a strong immunity can be naturally acquired in the field is confirmed and the immunity can be transferred passively to susceptible animals. It proved possible to confer a high degree of protection by active immunization by a method of vaccination [communicated separately at the Congress by Jarrett in his introductory remarks] using premigratory larvae which had been treated with X-rays. This prevented them from developing beyond the invasion of the mesenteric nodes where they produced a good immunity. R.T.L.

(472e) In this discussion of the commoner respiratory diseases of pigs, Whittlestone includes those due to lungworm and *Ascaris lumbricoides*. 1,284 out of 4,457 lungs (i.e. 29%) from 29 out of 32 herds (mostly reared on pasture) in 15 English counties had lungworm infection. He points out that although there are numerous reports on the development of pneumonia after experimental feeding with eggs of *Ascaris lumbricoides* none of these follows the method of infection by small repeated doses which presumably occurs in nature. It is probable that in the field the larvae migrating through the lungs cause only slight respiratory symptoms, but if the pig is already affected with pneumonia they may increase its severity and extent. R.T.L.

473—World Crops.

a. ANON., 1957.—" For soil fumigation." **9**, 507–508.

(473a) This is a short note on the efficacy of Nemagon (1,2-dibromo-3-chloropropane) as a nematicide. H.R.W.

474—World Health Organization. Monograph Series.

a. DOLMAN, C. E., 1957.—" The epidemiology of meat-borne diseases." No. 33, pp.11–108.
b. THORNTON, H., 1957.—" General principles for post-mortem inspection and hygienic judgement of meat." No. 33, pp. 179–193.
c. SCHMID, G., 1957.—"Post-mortem inspection and judgement of parasite-infected carcasses." No. 33, pp. 217–234.
d. HOOD, R. I. & JOHANSEN, H. H., 1957.—" Survey of meat-hygiene practices in Europe." No. 33, pp. 311–339.
e. KAPLAN, M. M., 1957.—" Meat-hygiene problems in tropical areas." No. 33, pp. 341–366.
f. ANON., 1957.—" Temperature control and salt treatment of meat containing trichinae or cysticerci." No. 33, pp. 444–446.
g. ANON., 1957.—" Danish regulations for the judgement of meat." No. 33, pp. 447–470.
h. ANON., 1957.—" Regulations of the Colony and Protectorate of Kenya for meat inspection." No. 33, pp. 471–483.
i. ANON., 1957.—" Discussions at WHO/FAO Seminar on Meat Hygiene." No. 33, pp. 484–502.

(474a) Dolman gives an account of meat as a disease-conveying agent and of the development of meat control measures since the dawn of history. A section of the article is devoted to the modes of infection and control of meat-borne helminthic diseases. R.T.L.

(474c) Schmid deals with the post-mortem inspection and judgement of carcasses infected with parasites which are (i) not transmissible to man, (ii) indirectly transmissible to man by change of the host and (iii) directly transmissible to man through the consumption of infected meat. As *Cysticercus bovis* is on the increase in Europe and as there is an added risk of trichinosis from the recent tendency toward increased consumption of raw or lightly cooked meat and sausages, more severe measures of meat control and better sanitary conditions on farms are needed. R.T.L.

(474d) The replies to a questionnaire, sent to member governments of the World Health Organization's European Region, on meat hygiene practices and public meat inspection procedures are summarized. Examination of pigs for trichinosis is compulsory in Germany, Greece, Italy, Norway, Portugal, Spain, Sweden, Turkey and Yugoslavia. It is compulsory in Austria for pork intended for consumption raw or for the preparation of raw meat products; in Denmark for boars, sows and pigs over 100 kg. dead weight; in Finland in slaughterhouses and for export or import animals; in the Netherlands only for pork imported from countries known to have the infection. The report states that no *Trichinella* infestation of pigs has been recorded for Ireland. Under diseases or conditions entailing total condemnation of carcasses listed for each country trichinosis is mentioned for Belgium, Finland, Germany, Ireland, Italy, Spain, Switzerland, Sweden and the United Kingdom. Cysticerciasis appears in the lists of Finland, Germany, Greece, Ireland, Morocco, Netherlands, Sweden, Switzerland and the United Kingdom. R.T.L.

(474e) In this paper on meat practice in tropical areas there is a section on the post-mortem inspection for the major zoonoses in which the occurrence of cysticerciasis and hydatidosis are specifically mentioned. R.T.L.

(474f) The procedures advocated by the United States government for the destruction of trichinae or cysticerci in meat and meat products by heating, refrigeration and by salting are succinctly outlined. R.T.L.

(474g) These extracts from the Regulations for the Judgement of Meat drawn up by the Danish Ministry of Agriculture Veterinary Directorate include Article 36, which deals with those internal parasitic diseases which are grounds for total or partial condemnation. R.T.L.

(474h) This annexe to "Health Hygiene" cites the regulations under the Public Health (Designated Places—Meat Inspection) Rules 1955 drawn up under the Public Health Ordinance by the Governor in Council of the Colony and Protectorate of Kenya. R.T.L.

(474i) The discussions at the WHO/FAO Seminar on Meat Hygiene held at Copenhagen in February, 1954 included hydatidosis, cysticerciasis and trichinosis. The destruction of all hydatid-infected organs at slaughterhouses, the compulsory regular treatment by vermifuges of all dogs, and their faeces, in infected areas, concurrently with education of the public and especially of butchers, shepherds and dog owners, reduced the incidence of hydatid in animals in the province of Friesland, Netherlands, from 16% to 2% in 1943. The chief source of infection of cattle by *Cysticercus bovis* in Europe is faecal-polluted sewage from the cities. The sand filtration of sewage used in South Africa gives reasonable, although not complete, safety. Meat inspection often ignores the predilection sites of *C. bovis*. Improvement in techniques for detecting human tapeworm carriers, e.g. by the use of cellophane tape is advocated. The Seminar favoured the application of trichinoscopic examination to a larger extent for *Trichinella spiralis* detection. R.T.L.

475—Year Book. Institute of Inspectors of Stock of New South Wales.

a. WARE, H. M., 1957.—" Fluke and black disease. With special reference to occurrence in the Murrumbidgee Irrigation Area." Year 1957, pp. 43–46.
b. GORDON, H. McL., 1957.—" Helminthic disease of cattle." Year 1957, pp. 51–61.
c. GEMMELL, M. A., 1957.—" Definitive hosts of *Echinococcus granulosus* (Rudolphi, 1805) (Batsch 1786) in Australia." Year 1957, pp. 81–86.

(475a) Fascioliasis in stock in New South Wales is largely confined to the coastal and tablelands but may extend as far west as Wellington and Cootamundra. In the Murrumbidgee Irrigation Area it has caused very heavy mortality in sheep, usually commencing in January. To control the vectors the broadcasting of bluestone over the Box swamps at appropriate times and the fencing off of the small areas is suggested. R.T.L.

(475b) In Australia, helminth infections in cattle cause much more damage than is generally realized as the losses are not usually so obvious as in sheep, yet worm infestation is the most important cause of slow growth in young stock. Drenching of cattle is much more troublesome than drenching sheep. Gordon groups the known helminths of cattle in Australia according to their importance, gives some general indications of their regional preferences, outlines their epidemiology and summarizes their diagnosis, pathogenesis, treatment and control. R.T.L.

(475c) In New South Wales hydatid disease has a limited distribution being found most frequently in the Northern and Southern Tablelands. The incidence is largely dependent on the duration of climatic conditions favourable to the survival of the eggs and not on the animal populations. 138 out of 561 station and farm dogs, 10 out of 21 dingoes, and one only of 41 foxes were found to be infected with *Echinococcus granulosus*. The results published by other

investigators are also cited. Although dogs are largely responsible for hydatid in sheep, the dingo probably shares with the dog in the causation of the disease in bovines in the northern regions of New South Wales. R.T.L.

476—Zeitschrift für Tropenmedizin und Parasitologie.

a. FRAGA DE AZEVEDO, J., CARVÃO GOMES, F., BAPTISTA, A. M. & BRAGANÇA GIL, F., 1957.—" Studies on the molluscocide action of copper sulphate using ^{64}Cu." **8** (4), 458–464. [German summary p. 463.]

b. GALLIARD, H., 1957.—" Mortalité chez les culicidés infestés par *Dirofilaria immitis* et *Wuchereria bancrofti*." **8** (4), 476–485. [English & German summaries pp. 483–484.]

(476a) The effect of copper sulphate on *Helisoma duryi normale*, *Planorbarius corneus*, *P. metidjensis*, *Biomphalaria pfeifferi* and *Australorbis glabratus* was studied by using the radioactive ^{64}Cu-labelled copper sulphate. Autoradiographs of histological sections of the snails showed that the copper diffused into the tissues and organs, acting as a general poison. The addition of sodium orthophosphate or sodium sulphate to the molluscicidal solutions did not inhibit the action of the copper on the snails. M.MCK.

(476b) The mortality caused by experimental filarial infections in mosquito vectors in North Vietnam was highest during the first five days and partially reflected the concentration of microfilariae in the blood feed. Among groups of up to 75 mosquitoes the mortalities in the first five days resulting from *Dirofilaria immitis* infections were, in mosquitoes kept at 28°–31° C., *Aëdes albopictus* 37·5% to 84%, *A. aegypti* 36% to 82%, *Armigeres obturbans* 56% to 90%, *Culex fatigans* 55% to 80% and *Anopheles hyrcanus* 60% to 66·6%. Although the parasite's development is not completed in *Armigeres obturbans*, this species suffered the highest mortality because of the large amount of blood it ingested. (The mortality of controls did not exceed 22·5%.) Mosquitoes which survived the first five days lived about 45 days. Fertilized females succumbed in greater numbers than unfertilized females. At 18°–22°C. the mortality during the first five days was much lower and mosquitoes survived up to 52 days. *Wuchereria bancrofti* infection killed 7·5% to 50% of mosquitoes kept at 28°–31°C. in the first five days while the remainder survived up to 70 days. M.MCK.

477—Zeitschrift für Wissenschaftliche Zoologie.

a. TANDON, R. S., 1957.—" Life history of *Gastrothylax crumenifer* (Creplin, 1847)." **160** (1/2), 39–71.

(477a) In India *Gastrothylax crumenifer* infects from 80% to 100% of the cattle, buffaloes, sheep and goats. Several thousand of these amphistomes have been collected from a single animal. The miracidium, which hatches in from 8 to 20 days according to the season, dies within six hours unless it finds a suitable molluscan host. Tandon has experimentally infected *Gyraulus convexiusculus*. The morphology of the miracidium, redia and cercaria is described and figured. The metacercaria encysts on vegetation. When a young goat was experimentally infected with the metacercariae one mature and three immature adults were obtained at autopsy nine months later. R.T.L.

478—Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene. Abteilung 1. Originale.

a. STUTZ, L., 1957.—" Dickdarmwurmbefunde beim Meerschweinchen." **168** (1/2), 159–160.

b. ENGELBRECHT, H., 1957.—" Einige Bemerkungen zu *Pomphorhynchus laevis* (Zoega, Müller 1776) als Parasit in *Pleuronectes flexus* und *Pleuronectes platessa*." **168** (5/6), 474–479.

c. ODENING, K., 1957.—" Die Helminthen-Fauna ostthüringer *Rana esculenta esculenta* (L.)." **169** (3/4), 288–304.

(478a) Stutz reports the finding of *Paraspidodera uncinata* in the caeca of a number of guinea-pigs used for experimental purposes in a hospital laboratory at Mannheim. The source of the guinea-pigs is not known. This is the first record of the parasite in the German literature. Although some animals were heavily infected (one guinea-pig harboured 30 worms) they showed no symptoms. A.E.F.

(478b) Engelbrecht's experiments on the life-history of *Pomphorhynchus laevis* lead to the conclusion that most probably only one intermediate host is required (not two as other workers have supposed) and that these are the amphipods *Gammarus* spp. and *Corophium volutator*. Engelbrecht has also studied the systematic position of *Pomphorhynchus* and provisionally divides *P. laevis* into three forms: (i) *P. l.* forma *laevis* for *P. laevis* (Meyer, 1933); (ii) *P. l.* forma *intermedius* for the specimens of *P. laevis* with distinctive basal proboscis hooks from the Greifswalder Bodden; and (iii) *P. l.* forma *tereticollis* for *P. tereticollis* (Meyer, 1933). A.E.F.

(478c) Odening examined 547 specimens of *Rana esculenta esculenta* from various biotopes in eastern Thuringia in 1955. He records 14 species of trematodes, four nematodes and one acanthocephalan. *Gorgodera varsoviensis* is recorded for the first time from Germany and *Haematoloechus schulzei* is a new record for this host. Life-history studies on *Prosotocus confusus confusus* showed the water-beetle, *Agabus bipustulatus*, to be the first intermediary and *Pleurodeles waltl* to be an experimental final host. Odening also discusses the status of certain species of *Prosotocus*, *Gorgodera* (*Mediodera*), *Haematoloechus* (*Anomolecithus*) and *H.* (*Skrjabinoeces*) and considers that a number of them should be relegated to subspecific rank. He lists *P. confusus confusus*, *G.* (*M.*) *pagenstecheri pagenstecheri*, *H.* (*A.*) *asper* and *H.* (*S.*) *similis similis* as new combinations. A.E.F.

479—Zentralblatt für Veterinärmedizin.

a. SCHMIDT-HOENSDORF, F. & EHRENTREICH, F., 1957.—" Untersuchungen über die Vernichtung von Strongylidenlarven durch 'Raubpilze' der Gattung *Arthrobotrys*." **4** (4), 389–402. [English, French & Spanish summaries pp. 401–402.]

(479a) Schmidt-Hoensdorf & Ehrentreich have carried out *in vitro* tests with three species of fungi of the genus *Arthrobotrys* in order to assess their possible role in the destruction of strongylid larvae. They found that the three-celled loops of *A. oligospora* and *A. conoides* were too small to capture larvae and although their spiral loops are larger, and under optimal conditions destroyed 30% to 50% of larvae, these two species cannot be considered suitable for trapping strongylid larvae. Although the predacious rings and loops of *A. dactyloides* are admirably suited to the trapping and destruction of the larvae (in the experiments all larvae were destroyed) the species is so difficult to culture that it is unlikely, under natural conditions, to play a significant role in the destruction of larvae. The predacious organs of the three species and their method of trapping larvae are described and illustrated with photomicrographs. A.E.F.

480—Zoologicheski Zhurnal.

a. RUBTSOV, I. A., 1957.—[On the biological basis of the system of control measures against black flies (Simuliidae).] **36** (3), 373–395. [In Russian: English summary pp. 394–395.]
b. GELLER, E. R., 1957.—[Epizootiology of *Contracaecum* infection of sterlet, *Acipenser ruthenus*.] **36** (10), 1441–1447. [In Russian: English summary p. 1447.]
c. IVASIK, V. M., 1957.—[Parasite fauna of carp in winter.] **36** (10), 1571–1573. [In Russian: English summary p. 1573.]
d. DUBININA, M. N., 1957.—[Experimental study of the life-cycle of *Schistocephalus solidus* (Cestoda: Psuedophyllidea).] **36** (11), 1647–1658. [In Russian: English summary p. 1658.]

e. GNEZDILOV, V. G., 1957. — [*Mesocricetus auratus* Waterhouse as the potential definitive host of the tapeworm *Taenia solium*.] **36** (11), 1770–1773. [In Russian: English summary p. 1773.]

f. NIKISHINA, E. F., 1957.—[The adaptation of *Limnaea stagnalis* to the drying up of water reservoirs.] **36** (12), 1896–1897. [In Russian: English summary p. 1897.]

(480a) From the available data on the biology of Simuliidae and from his own experiments, the control measures recommended by Rubtsov are: control of adults by mosquito netting, protection from their attacks by repellents and chemical treatment with organic preparations, extermination of the larvae by organic insecticides, collection of mass ovipositions and regular cleaning of the substrate in reservoirs. [From author's summary.] R.T.L.

(480b) *Contracaecum bidentatum* may infect as much as 94% of *Acipenser ruthenus* in the Volga. The infection showed a peak in September-October and was highest in the year following a warm autumn and subsequent early spring. The most highly infected fish were one to two years old. The worms were localized in the oesophagus and principally at the bottom of the muscular stomach where they feed on the liquid contents. Only accidentally do they occur in the intestine, liver and swim bladder. In starving and dying fish the adult worms, particularly gravid females, egress through the gill slits. Geller suggests that this migration of worms from abnormal conditions or atypical localizations plays an important role in their dissemination. G.I.P.

(480c) In the winters of 1948–55, a total of 2,080 carp were examined from 24 pond fisheries in the western Ukraine and 34 parasite species found. Among the most wide-spread helminths were *Gyrodactylus elegans*, *Sanguinicola inermis*, *Diplostomulum spathaceum*, *Dactylogyrus anchoratus* and *D. solidus*; *G. elegans* and *G. medius* infections were low in winter; *D. anchoratus* infections continued throughout the year, fell somewhat after the autumn salt bath of the carp and began to rise again in December-January; *D. vastator* infection increased towards spring; in several of the fisheries *D. solidus* caused great losses of two-year-old carp in late autumn and gravid females in early spring; *S. inermis* infections fell in spring when the old generation of worms died; in general the infection increased with the age of the fish. G.I.P.

(480d) *Schistocephalus solidus* shows but little host specificity. Dubinina has developed it experimentally in *Anas platyrhynchos*, *Columba livia*, *Gallus gallus*, *Turdus musicus*, *Sturnus vulgaris*, *Felis catus* and also in Ringer's solution at 40–41° C. The adult length of life in birds was 100 hours, fertilized eggs appearing after 30 hours. At 22–25° C. coracidia developed in 10 to 12 days and procercoids in 7 to 8 days, and at 16–18° C. in 17 to 19 days and 13 to 14 days respectively. In addition to infecting the four known cyclops hosts the procercoids were shown to infect also *Cyclops strenuus*, *C. furcifer*, *Acanthocyclops gigas* and, less readily, *Diaptomus gracilis*. Mature procercoids could still be found in the cyclops after 47 days. Plerocercoids became infective only when sexually mature, e.g. in *Gasterosteus aculeatus* after 177 days, segmentation having been completed after 72 to 75 days. The number of segments in plerocercoids from different fish species varied considerably. As plerocercoids originating from *G. aculeatus* infected three out of four *G. aculeatus* but none of 16 *Pungitius pungitius*, there must be two subspecies of *S. solidus*. An analysis of the morphology of the different stages in the development of some genera in Diphyllobothriidae shows that *Schistocephalus* together with *Ligula* and *Digramma* belong to the separate family Ligulidae. G.I.P.

(480e) Fourteen out of 31 hamsters, *Mesocricetus auratus*, became infected following the administration *per os* of 2 to 100 *Cysticercus cellulosae* obtained from pig flesh. Tapeworms 0·2 cm. to 20 cm. long were found 30 to 35 days later but all were immature. The infection did not take in rabbits and guinea-pigs. G.I.P.

(480f) *Limnaea stagnalis* was able to survive the temporary drying up of a reservoir in the Moscow region only in the spring when breeding. The newly hatched young only survived after being three to four days in water. R.T.L.

481—Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere.

a. JAISWAL, G. P., 1957.—" Studies on the trematode parasites of fishes and birds found in Hyderabad State. Part I—IV." **85** (1/2), 1–72.

(481a) This article consists of four parts. In Part I the occurrence of *Neoganada barabankiae* from *Clarias batrachus*, and *Haplorchis attenuatum* from *Mystus* (*Macronus*) *tengara* in Hyderabad State are recorded. Five new species of *Prosthogonimus* are described and figured and a key is provided for the 31 species now recognized. *Prosthogonimus dollfusi* n.sp. from the spotted owl *Athene b. brama* and *Corvus splendens* is compared with *P. macrorchis* but differs in the ratio of the suckers, the position of the ovary in relation to the acetabulum and testes and in the posterior extent of the vitellaria. *P. ketupi* n.sp. from the southern fish owl *Ketupa z. zeylonensis* is similar to *P. ovatus* but the ovary lies partially lateral to and partially posterior to the acetabulum, the testes reach forward into the ovarian zone, the vitellaria partly overlap the caeca and extend beyond the testes posteriorly. *P. mesolecithus* n.sp. from the northern spotted owl *Athene brama indica* differs from *P. anatinus* in the sucker ratio, in the anterior extent of the vitellaria and the presence of distinctly larger testes. *P. hyderabadensis* n.sp. from the cattle egret *Bubulcus ibis* has close affinities with *P. cuneatus* but the vitellaria extend considerably beyond the testes posteriorly and are much smaller while the ratio of the suckers is 1:3. In *P. singhi* n.sp. from *Ardeola grayii* the gonads are in the middle of the body and the vitellaria extend anteriorly to the intestinal fork and terminate posteriorly somewhat beyond the testes. The acetabulum is double the size of the oral sucker.

In Part II Jaiswal reduces the five genera into which *Lyperosomum* species have been distributed to subgeneric rank, gives a key and lists the 44 species which fall into the subgenus *Brachylecithum* with their hosts. He figures and describes (i) *Lyperosomum* (*Brachylecithum*) *sayeedi* n.sp. from the southern painted partridge *Francolinus p. pictus* at Hyderabad which differs from *L.* (*B.*) *halcyonis* in having oval and larger testes, the acetabulum is only slightly larger than the oral sucker and the ratio of body breadth to length is 1:11. Other body measurements also differ. (ii) *L.* (*B.*) *skrjabini* n.sp. from the Indian house crow *Corvus splendens* differs from *L.* (*B.*) *eophonae* in having oval testes and ovary, the sucker ratio is 1:1 and the vitelline follicles are larger occupying about one seventh of the body length. (iii) In *Zonorchis travassosi* n.sp. from the Indian robin *Saxicoloides fulicata cambaiensis* the testes lie mostly posterior to the hind border of the acetabulum, the ovary is elongate and elliptical and the vitellaria are poorly developed. (iv) *Z. singhi* n.sp. from the peacock *Pavo cristatus* is closely related to *Z. delectans* but the ovary and testes are but subequal, not distinctly unequal. The testes are more distinctly posterior to the acetabulum and the vitellaria terminate behind the acetabulum. (v) *Skrjabinus indicus* n.sp. from the Indian stone-chat *Saxicola c. caprata* is nearest to *S. lanceatus* but the body is spindle-shaped, the intestinal fork is midway between the two suckers and the vitellaria occupy about half of the marginal length of the body. This is the first record of the occurrence of the genus *Skrjabinus* in India. Five additional piscine hosts in Hyderabad for *Isoparorchis hypselobagri* (Billet, 1898) are added to the six reported by Bhalerao in 1936.

In Part III a key is given to the 16 species of *Clinostomum* including four new species, viz., (i) *C. deccanum* n.sp. from a grey heron *Ardea cinerea* is differentiated by the extent of the vitellaria and the smooth testes. The eggs measure 107 μ–133 μ × 74 μ–80 μ. (ii) In *C. demiegrettae* n.sp. from the Indian reef heron *Demigretta asha* the vitellaria extend posteriorly from the level of the hind border of the acetabulum, the size of which is only one-and-a-half times that of the oral sucker. The ovary is crescentic and the testes are deeply lobed. (iii) *C. hyderabadensis* n.sp. from *Ardeola grayii* differs from *C. complanatum* as the uterine sac is much smaller while the ovary is relatively larger and the sucker ratio is only 1:1·7. The genitalia are placed relatively anteriorly and the eggs are thick-shelled and oval and measure 115 μ–141 μ × 66 μ–74 μ. (iv) *C. singhi* n.sp. from *Ardeola grayii* is characterized by the position of the gonads which lie mostly anterior to the middle of the post-acetabular part of the body. The oral and ventral suckers are close together and subequal in size. The caeca are much

sacculated and the vitellaria extend beyond the tips of the caeca. Jaiswal also gives a key to nine clinostome metacercariae including three new metacercariae, viz., *C. macrosomum* n.sp. from the fish *Channa (Ophicephalus) striatus*, *C. mastacembeli* n.sp. from a bam *Mastacembelus armatus* and *C. progonum* n.sp. from *Rana cyanophlyctis*. To the genus *Euclinostomum* he adds *E. bhagavantami* n.sp. from *Demigretta asha*. Its distinguishing characters are the simple unbranched diverticula of the caeca, the uterine sac fills most of the space between the caeca and the anterior testis does not extend forwards beyond the equatorial plane of the post-acetabular region. *E. heptacaecum* n.sp. from the edible fish *Channa (Ophicephalus) punctatus* has seven pairs of caecal diverticula, a truncated anterior end and a much broader uterine sac than *E. indicum*. *E. channai* n.sp. from the food fish *C. (O.) marulius* differs from *E. indicum* for the pre-acetabular portion is sharply marked off and terminates in a truncated head end. The diverticula are distended and have broad rounded ends while the body length is more than twice that of *E. indicum*.

In Part IV Jaiswal reviews the genera *Psilochasmus* and *Phyllodistomum* and describes and figures new species. *Psilochasmus alii* n.sp. from the comb-duck *Sarkidiornis melanotos* is allied to *P. longicirratus* but the cirrus sac extends to the level of the front border of the ovary, the tail is hook-like and sharply marked off and the eggs are larger (0·110 mm.–0·130 mm. × 0·068 mm.–0·078 mm.). *P. megacetabulus* n.sp. from *Ardeola grayii* has a distinctly longer oesophagus than *P. alii*, the ovary is widely separated from the front testis, the sucker ratio is 1:2·4 whereas in *P. alii* it is 1:2, the median genital aperture is ventral to, and the acetabulum is immediately under, the intestinal fork. (This new species is described from a single specimen.) Jaiswal accepts the subdivision of *Phyllodistomum* into four subgenera by Pigulevsky and lists with their hosts the 30 species of the subgenus *Catoptroides* described up to 1954. He adds *Phyllodistomum (Catoptroides) parorchium* n.sp. from *Glossogobius (Gobius) giuris*. It differs from *P. (C.) lacustri* in that the genital aperture is nearer to the intestinal fork than to the acetabulum, the testes are deeply lobed and more closely approximated, the vitellaria are spread out laterally while the two portions of the body are less sharply marked off. *P. (C.) indianum* n.sp. from the catfish *Heteropneustes (Saccobranchus) fossilis* has close affinities with *P. (C.) singulare* but the vitellaria are lobed, poorly developed and in paired masses, the heart-shaped ovary is larger while the narrow pre- and spatulate post-acetabular portions of the body are longer. Two immature *Phyllodistomum* sp. were collected from the body-cavity of the carp *Labeo fimbriata*. A single specimen of *Eumegacetes singhi* n.sp. from the crow pheasant *Centropus sinensis* differs from the other species of the genus in possessing a spinous cuticle covering the body. While it resembles *E. komarovi*, the vitellaria extend far forward and the testes are much larger. *Ardeola grayii* is recorded as a new host for *Posthodiplostomum cuticola* (Nordmann, 1832). The article concludes with a systematic list of all the trematodes and a classified list of their piscine and avian hosts mentioned in this work. R.T.L.

482—Zooprofilassi.

a. MONTRONI, L., 1957.—" Echinococco multiloculare in fegato bovino." **12** (7), 445–446.

483—Züchter.

a. ROTHACKER, D., 1957.—" Beiträge zur Resistenzzüchtung gegen den Kartoffelnematoden. I. Prüfung von Primitiv- und Wildkartoffeln auf das Verhalten gegenüber dem Kartoffelnematoden." **27** (3), 124–132.

(483a) Rothacker tested for resistance to *Heterodera rostochiensis* the collection of wild and primitive potatoes of the Institut für Pflanzenzüchtung Gross-Lüsewitz. Plants of 42 species from 259 collections were tested for two seasons. In all cases seedlings were tested and, in some, tubers as well. The plants were grown in pots and counts made of cysts on the soil ball at the yellow to brown stage. The plants were classified according to the cyst counts. All forms were susceptible except *Solanum vernei* (= *S. ballsii*), which confirms the results of other authors. It is considered that this is the only species of use for the breeding of resistant varieties. M.T.F.

NON-PERIODICAL LITERATURE

484—BOEV, S. N., GALUZO, I. G., GVOZDEV, E. V. [Editors], 1957.—[Parasitological literature of Kazakhstan. Abstracted bibliography of parasites and parasitic diseases of man and of domestic and wild animals.] Alma-Ata: Izdatelstvo Akademii Nauk Kazakhskoi SSR., 311 pp. [In Russian.]

485—CARLETON, H. M. & DRURY, R. A. B., 1957.—" Histological technique for normal and pathological tissues and the identification of parasites." London: Oxford University Press, 3rd edit., xvi+343 pp.

This new edition gives in compact form the chief methods employed in the microscopical examination of human and other mammalian organs. The fundamental processes of fixation, embedding, section-cutting and staining together with accessory and special methods and the technique most suitable for the identification of morbid changes and of parasites in tissues are described. There is a separate chapter on the methods applicable to parasitic worms.

R.T.L.

486—DUDDINGTON, C. L., 1957.—" The friendly fungi. A new approach to the eelworm problem." London: Faber & Faber, 188 pp.

Duddington presents in non-technical language an account of the various ways in which predacious fungi attack eelworms in the soil. Some like *Arthrobotrys* and *Dactylella* do so by means of traps of sticky loops from which very fine branches penetrate the cuticle of the captured worm and enter its body to grow out into fungal threads which eventually fill it. In *Stylopage hadra* the whole of the mycelium threads are sticky and hold any eelworm which touches them. Other fungi capture the eelworms in constricting rings without any adhesive. There are also endozoic predacious fungi, e.g. *Harposporium anguillulae*, the sticky spores of which adhere to the eelworm, germinate and penetrate the cuticle to form a mycelium inside the eelworm body. Linford's studies in Hawaii on the role of predacious fungi in controlling root-knot eelworm in pineapples, the researches of French workers on their potential usefulness in destroying the larvae of intestinal helminths of farm stock and of man, and Duddington's own attempts to control the potato-root eelworm are then summarized. The volume ends with a useful appendix on the collection, cultivation and examination of predacious fungi which should stimulate further research in this fascinating field. R.T.L.

487—FAUST, E. C. & RUSSELL, P. F., 1957.—" Craig and Faust's clinical parasitology." London : Henry Kimpton, 6th edit., 1078 pp.

[This sixth edition of "Clinical Parasitology" has been revised by E. C. Faust & P. F. Russell with the editorial assistance of D. R. Lincicome.]

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